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# RADIO TEST REPORT

## FCC 47 CFR PART 15 SUBPART C

**Test Standard**      **FCC Part 15.247**  
**FCC ID**              **2ALSZ-CL3100T**  
**Product name**      **Photocontroller**  
**Brand name**        **CIMCON**  
**Model No.**         **iSLC3100-7P-T**  
**Test Result**        **Pass**

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory).



Approved by:

Tested by:

A handwritten signature in black ink, appearing to read "Sam Chuang".

A handwritten signature in black ink, appearing to read "Jerry Chuang".

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Sam Chuang  
Manager

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Jerry Chuang  
Engineer

## Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	May 29, 2018	Initial Issue	ALL	Doris Chu
01	June 21, 2018	1. Remove "Powered from host device". 2. Add remark in section 1.3. 3. Revise section 5.6.2 Test Procedure 4 (2) (2.2)	P.4, P.6, P.36	Doris Chu

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## 1. GENERAL INFORMATION

### 1.1 EUT INFORMATION

Applicant	CIMCON Lighting, Inc. 600 Technology Park Drive, Billerica, MA 01821 USA
Manufacturer	CIMCON Lighting, Inc. 600 Technology Park Drive, Billerica, MA 01821 USA
Equipment	Photocontroller
Brand name	CIMCON
Model Name	iSLC3100-7P-T
Model Discrepancy	N/A
Received Date	May 14, 2018
Date of Test	May 23 ~ 30, 2018
Output Power(W)	Ant 0: 0.1099 Ant 1: 0.1148
Power Supply	120-277V AC, 50-60Hz

## 1.2 EUT CHANNEL INFORMATION

Frequency Range	2402~2475.63MHz
Modulation Type	DSSS-BPSK
Bandwidth	1.0593 MHz

**Remark:**

Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 and RSS-GEN Table A1 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
<input type="checkbox"/> 1 MHz or less	1	Middle
<input type="checkbox"/> 1 MHz to 10 MHz	2	1 near top and 1 near bottom
<input checked="" type="checkbox"/> More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

### 1.3 ANTENNA INFORMATION

<b>Antenna Type</b>	<input type="checkbox"/> PIFA <input type="checkbox"/> PCB <input type="checkbox"/> Dipole <input checked="" type="checkbox"/> Chip
<b>Antenna Gain</b>	Gain: 1.2 dBi

**Remark:**

The EUT (model: iSLC3100-7P-T) comes with two the same antennas (Ant 0 & Ant 1) for sale. The output power is highest with Ant1, so we used the antenna with Ant 1 to performed testing under operating condition.

### 1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 1.4003
RF output power, conducted	+/- 1.1372
Power density, conducted	+/- 1.4003
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683
3M Semi Anechoic Chamber / 40G~60G	+/- 1.8509
3M Semi Anechoic Chamber / 60G~75G	+/- 1.9869
3M Semi Anechoic Chamber / 75G~110G	+/- 2.9651
3M Semi Anechoic Chamber / 110G~170G	+/- 2.7807
3M Semi Anechoic Chamber / 170G~220G	+/- 3.6437
3M Semi Anechoic Chamber / 220G~325G	+/- 4.2982

**Remark:**

- 1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

## 1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at  
No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	-	-
Radiation	Jerry Chuang	-
RF Conducted	Dally Hong	-

**Remark:** The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

## 1.6 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Power Meter	Anritsu	ML2495A	1012009	09/18/2017	09/17/2018
Power Sensor	Anritsu	MA2411B	917072	09/18/2017	09/17/2018
Spectrum Analyzer	R&S	FSV 40	101073	10/02/2017	10/01/2018
Directional Coupler	Agilent	87301D	MY44350252	07/25/2017	07/24/2018
SUCOFLEX Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018
Divider	Solvang Technology	2-18GHz 4Way	STI08-0015	07/26/2017	07/25/2018
3M 966 Chamber Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Bilog Antenna	Sunol Sciences	JB3	A030105	06/20/2017	06/19/2018
Horn Antenna	ETC	MCTD 1209	DRH13M02003	08/25/2017	08/24/2018
Pre-Amplifier	EMEC	EM330	60609	06/07/2017	06/06/2018
Spectrum Analyzer	Agilent	E4446A	US42510252	11/27/2017	11/26/2018
Loop Ant	COM-POWER	AL-130	121051	03/21/2018	03/20/2019
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Pre-Amplifier	HP	8449B	3008A00965	06/27/2017	06/26/2018
Filter	Micro Tronics	BRM 50702	120	05/14/2018	05/13/2019
Filter	Micro Tronics	HPM13195	3	05/14/2018	05/13/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	07/31/2017	07/30/2018

Conducted Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
LISN	R&S	ENV216	101054	02/06/2018	02/05/2019
LISN	SCHWARZBECK	NSLK 8127	8127-541	02/09/2018	02/08/2019
EMI Test Receiver	R&S	ESCI	101203	11/02/2017	11/01/2018

**Remark:** Each piece of equipment is scheduled for calibration once a year.

## 1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	NB(B)	Toshiba	PORTEGE R30-A	N/A	PD97260H
2	NB(G)	Lenovo	IBM 1951	N/A	CJ6UPA3489WL

Support Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
	N/A				

## 1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247, KDB 558074 D01 V04.



## 2. TEST SUMMERY

<b>FCC Standard Section</b>	<b>Report Section</b>	<b>Test Item</b>	<b>Result</b>
15.203	1.2	Antenna Requirement	Pass
15.207(a)	5.1	AC Conducted Emission	Pass
15.247(a)(2)	5.2	6 dB Bandwidth	Pass
-	5.2	Occupied Bandwidth (99%)	Pass
15.247(b)	5.3	Output Power Measurement	Pass
15.247(e)	5.4	Power Spectral Density	Pass
15.247(d)	5.5	Conducted Band Edge	Pass
15.247(d)	5.5	Conducted Emission	Pass
15.247(d)	5.6	Radiation Band Edge	Pass
15.247(d)	5.6	Radiation Spurious Emission	Pass

### 3. DESCRIPTION OF TEST MODES

#### 3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	DSSS-DBPSK
Test Channel Frequencies	1. Lowest Channel : 2402MHz 2. Middle Channel : 2439.81 MHz 3. Highest Channel : 2475.63MHz
Operation Transmitter	1T1R

### 3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conducted Emission	
Test Condition	AC Power line conducted emission for line and neutral
Voltage/Hz	120V/60Hz
Test Mode	Mode 1:EUT power by AC adapter via power cable.
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4

Radiated Emission Measurement Above 1G	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Voltage/Hz	120V/60Hz
Test Mode	Mode 1:EUT power by AC adapter via power cable.
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4
Worst Position	<input type="checkbox"/> Placed in fixed position. <input type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input checked="" type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)
Worst Polarity	<input checked="" type="checkbox"/> Horizontal <input type="checkbox"/> Vertical

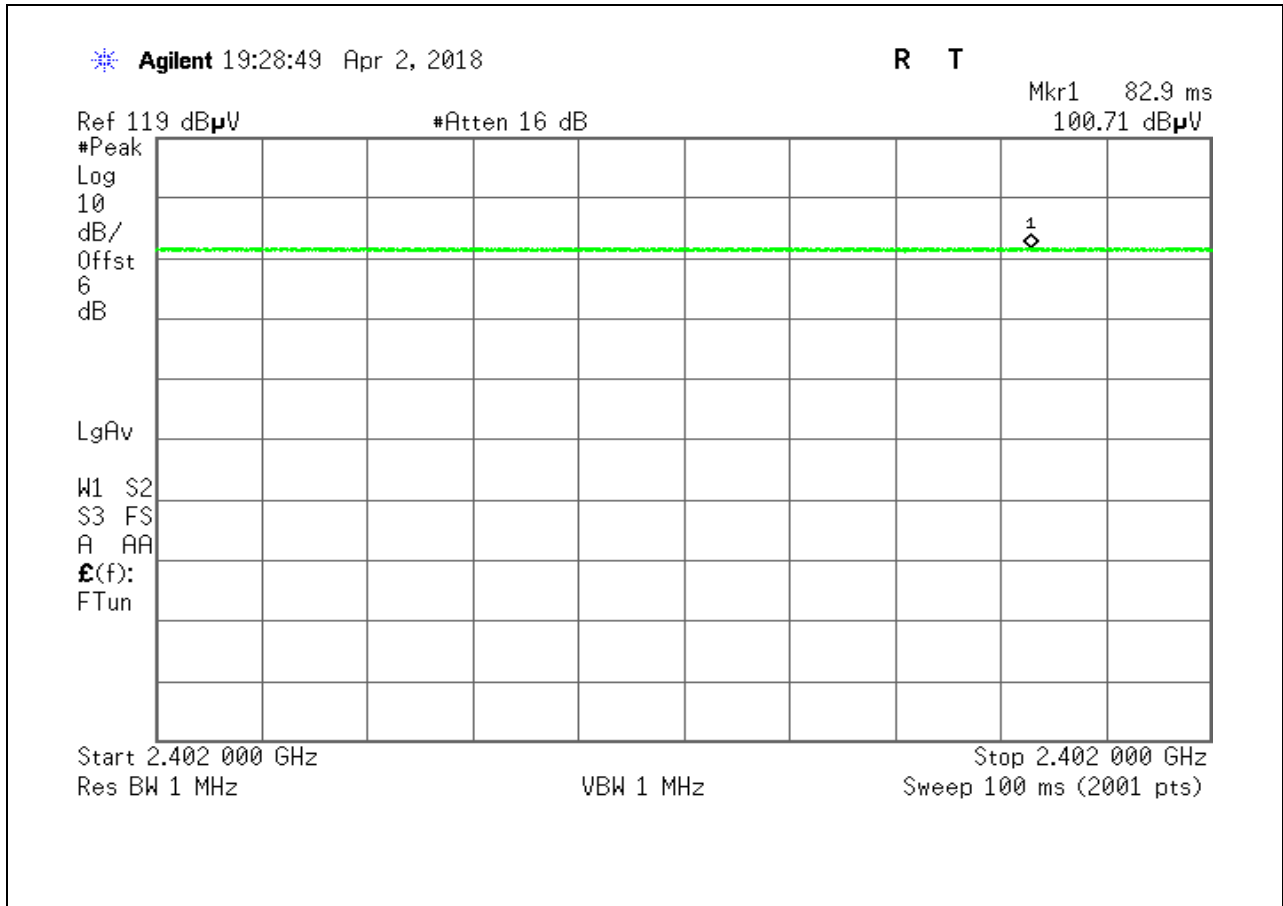
Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Voltage/Hz	120V/60Hz
Test Mode	Mode 1:EUT power by AC adapter via power cable.
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4

*Remark:*

1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case(Y-Plane and Horizontal) were recorded in this report
3. For below 1G, AC power line conducted emission and radiation emission were performed the EUT transmit at the highest output power channel as worse case.

### 4. EUT DUTY CYCLE

Duty Cycle			
TX ON (ms)	TX ALL (ms)	Duty Cycle (%)	Duty Factor(dB)
1.0000	1.0000	100.00%	0.00



## 5. TEST RESULT

### 5.1 AC POWER LINE CONDUCTED EMISSION

#### 5.1.1 Test Limit

According to §15.207(a)(2),

Frequency Range (MHz)	Limits(dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

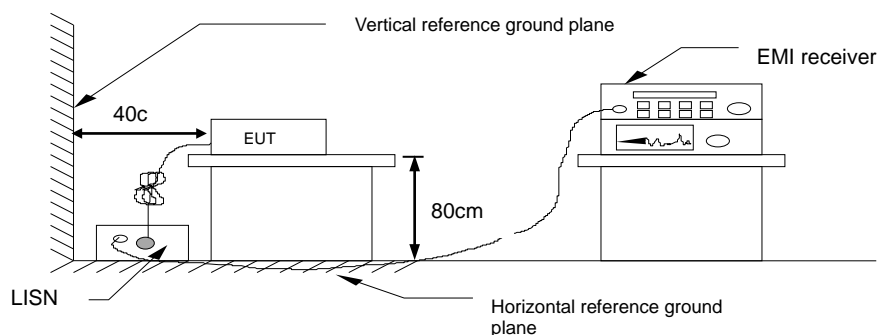
\* Decreases with the logarithm of the frequency.

#### 5.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

#### 5.1.3 Test Setup

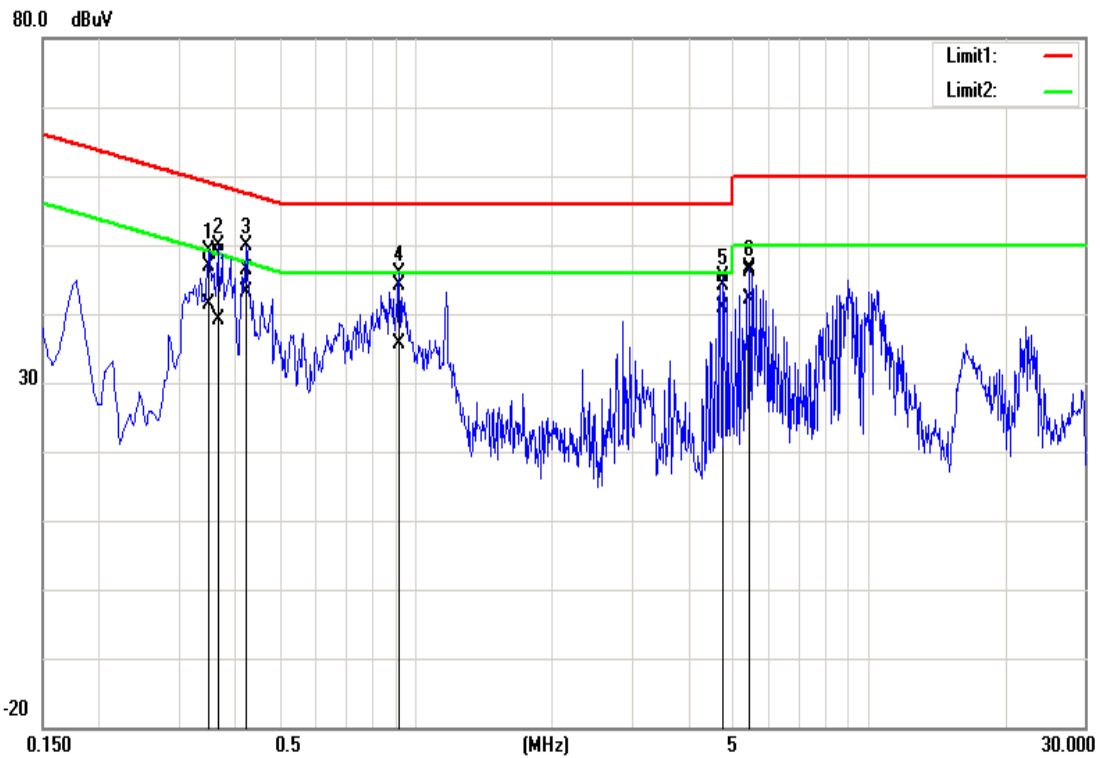


#### 5.1.4 Test Result

**Pass**

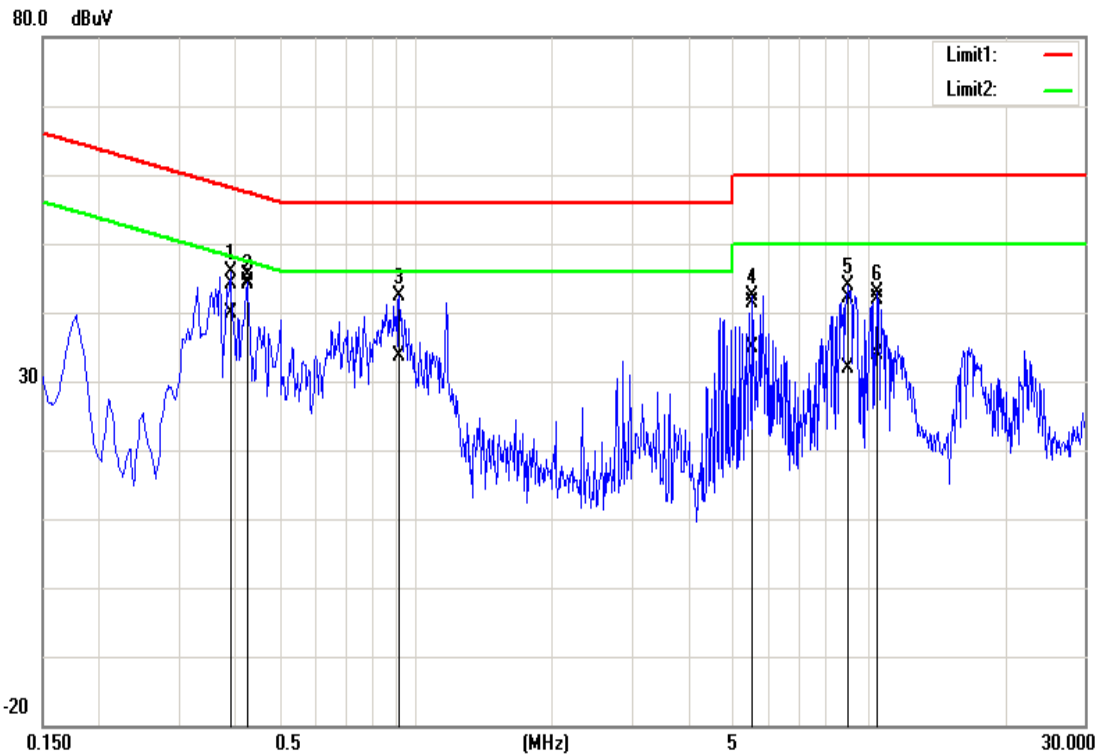
**Test Data**

Test Mode:	Mode 1	Temp/Hum	24(°C)/ 50%RH
Test Voltage:	120Vac / 60Hz	Test Date	May 30, 2018
Phase:	Line	Test Engineer	Dally Hong



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.3500	46.67	41.37	0.12	46.79	41.49	58.96	48.96	-12.17	-7.47	Pass
0.3660	48.39	39.07	0.12	48.51	39.19	58.59	48.59	-10.08	-9.40	Pass
0.4220	46.14	43.10	0.12	46.26	43.22	57.41	47.41	-11.15	-4.19	Pass
0.9220	43.95	35.59	0.13	44.08	35.72	56.00	46.00	-11.92	-10.28	Pass
4.7940	43.84	40.73	0.20	44.04	40.93	56.00	46.00	-11.96	-5.07	Pass
5.4660	45.90	41.96	0.22	46.12	42.18	60.00	50.00	-13.88	-7.82	Pass

Test Mode:	Mode 1	Temp/Hum	27(°C)/ 53%RH
Test Voltage:	120Vac / 60Hz	Test Date	May 30, 2018
Phase:	Neutral	Test Engineer	Dally Hong



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.3900	44.10	39.86	0.13	44.23	39.99	58.06	48.06	-13.83	-8.07	Pass
0.4260	45.13	44.09	0.13	45.26	44.22	57.33	47.33	-12.07	-3.11	Pass
0.9220	42.20	33.47	0.14	42.34	33.61	56.00	46.00	-13.66	-12.39	Pass
5.5540	41.27	34.53	0.23	41.50	34.76	60.00	50.00	-18.50	-15.24	Pass
9.0180	41.82	31.56	0.28	42.10	31.84	60.00	50.00	-17.90	-18.16	Pass
10.4540	41.64	33.67	0.31	41.95	33.98	60.00	50.00	-18.05	-16.02	Pass

## 5.2 6DB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

### 5.2.1 Test Limit

According to §15.247(a)(2),

#### 6 dB Bandwidth :

Limit	Shall be at least 500kHz
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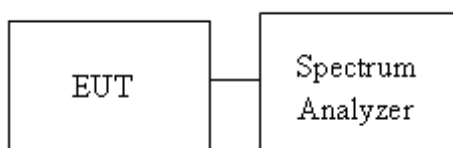
Occupied Bandwidth(99%) : For reporting purposes only.

### 5.2.2 Test Procedure

Test method Refer as KDB 558074 D01 v04, Section 8.1 and ANSI 63.10:2013 clause 6.9.2,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW =100KHz , VBW = 300KHz and Detector = Peak, to measurement 6dB Bandwidth
4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

### 5.2.3 Test Setup



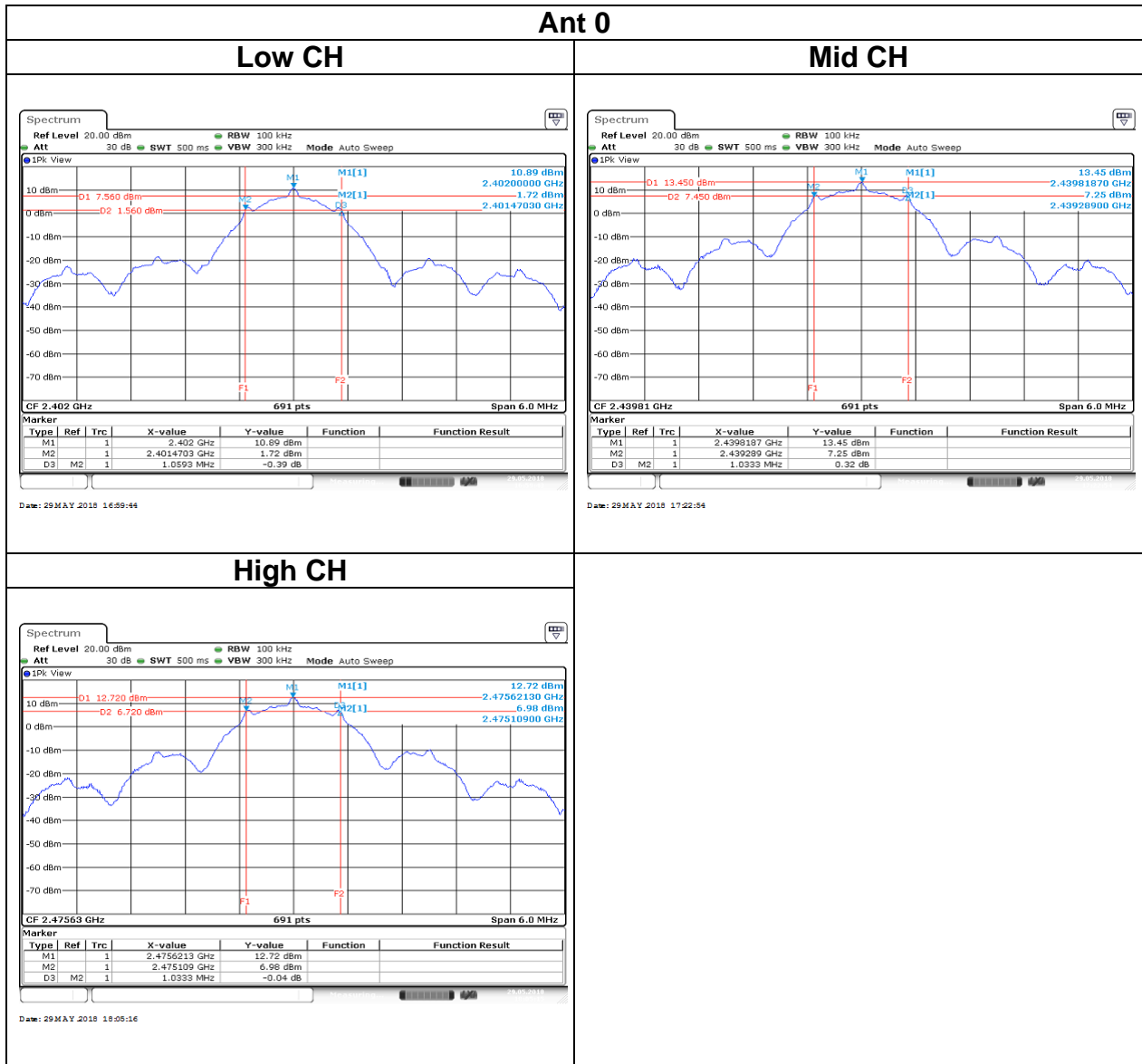


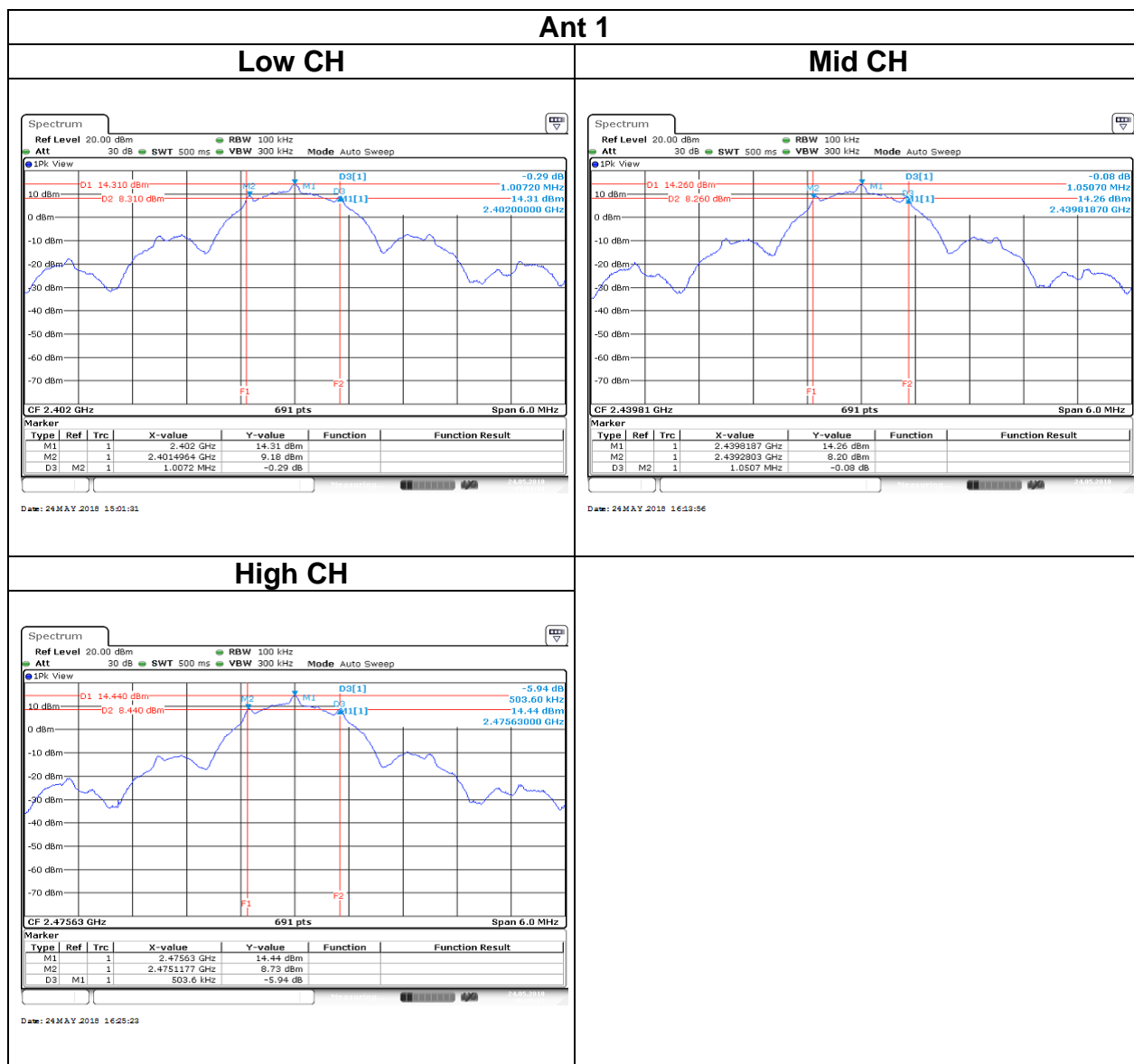
### 5.2.4 Test Result

Channel	Frequency (MHz)	Ant 0 OBW (99%) (MHz)	Ant 1 OBW (99%) (MHz)	Ant 0 6dB BW (MHz)	Ant 1 6dB BW (MHz)	6dB limit (kHz)
Low	2402	1.3806	2.4052	1.0593	1.0072	≥500
Mid	2439.81	1.6931	1.9710	1.0333	1.0507	
High	2475.63	1.9363	1.6150	1.0333	0.5036	

# Test Data

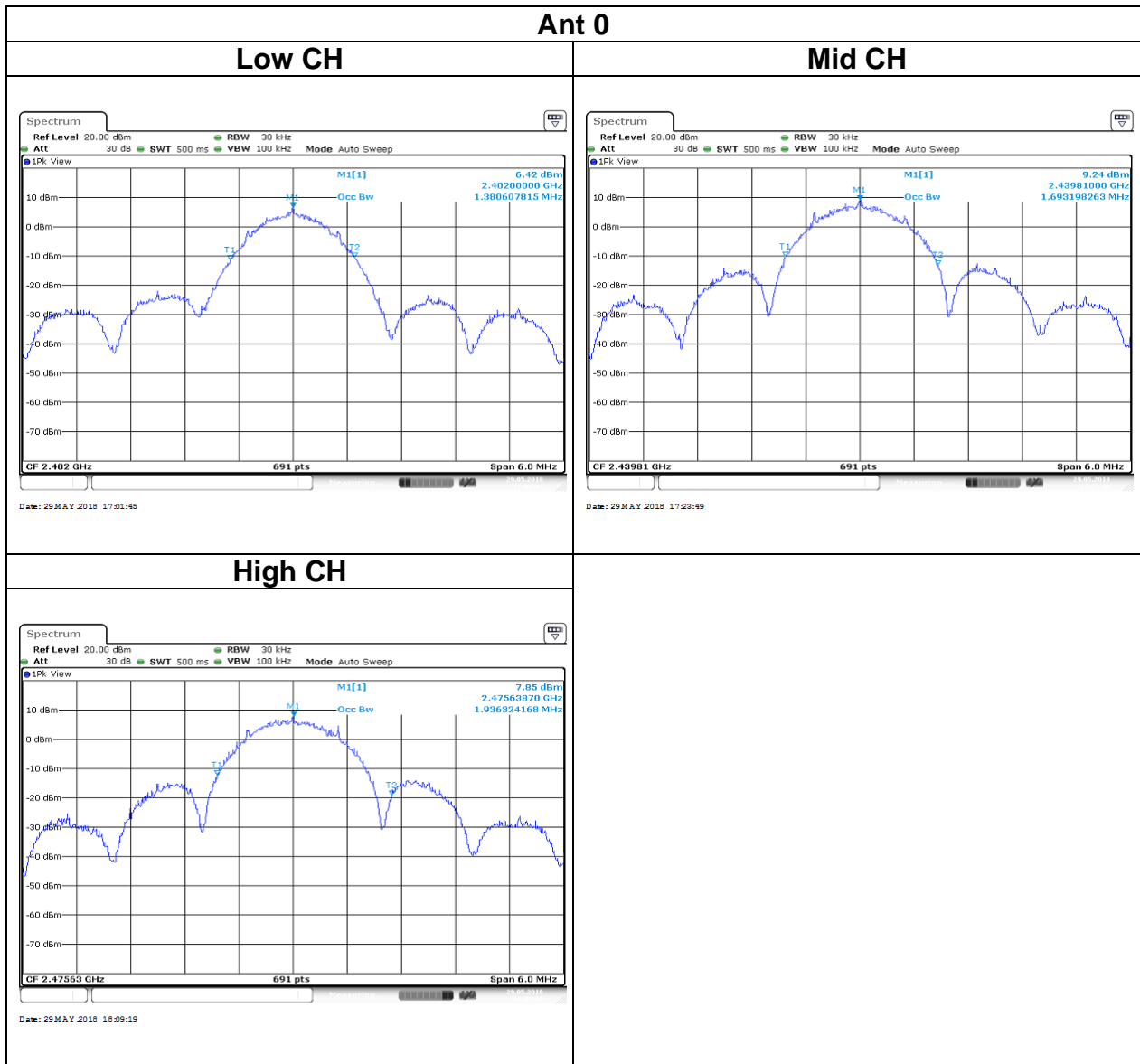
## 6 dB Bandwidth

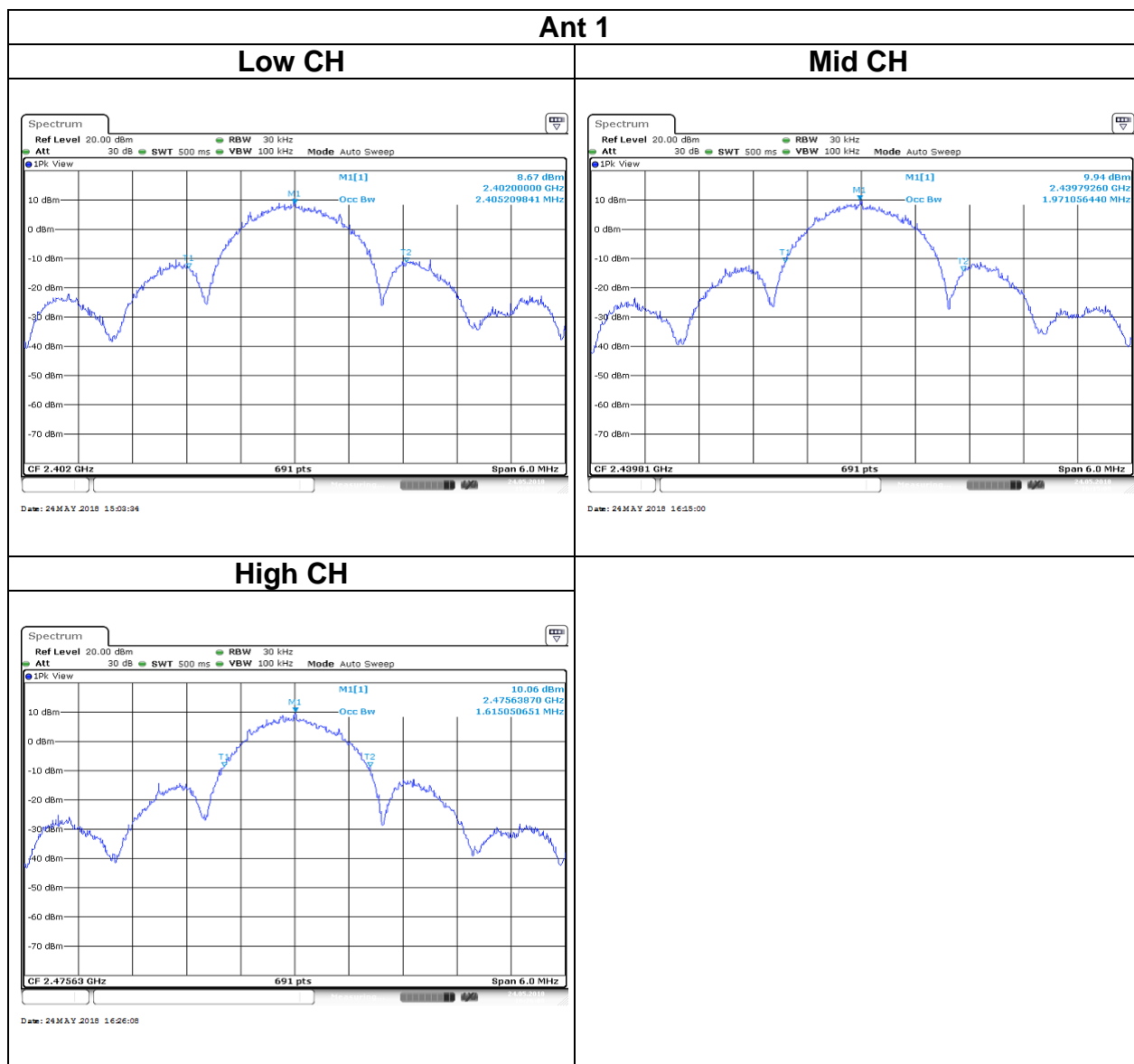




# Test Data

## 99% Bandwidth





## 5.3 OUTPUT POWER MEASUREMENT

### 5.3.1 Test Limit

According to §15.247(b),

**Peak output power :**

For systems using digital modulation in the 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt(30 dBm), base on the use of antennas with directional gain not exceed 6 dBi. If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Limit	<input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 30dBm <input type="checkbox"/> Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6)] <input type="checkbox"/> Point-to-point operation :
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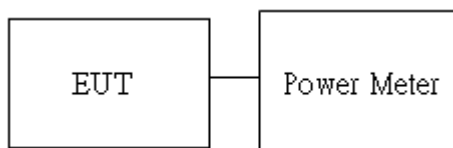
**Average output power :** For reporting purposes only.

### 5.3.2 Test Procedure

Test method Refer as KDB 558074 D01 v04, Section 9.1.3.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

### 5.3.3 Test Setup



### 5.3.4 Test Result

**Peak output power :**

**Ant 0**

CH	Freq. (MHz)	power setting	PK Power (dBm)	PK Total Power (dBm)	PK Total Power (W)	Limit (dBm)
		Ant 0	Ant 0			
Low	2402	38	19.27	19.27	0.0845	30
Mid	2439.81	38	19.56	19.56	0.0904	
High	2475.63	40	20.41	20.41	0.1099	

**Ant 1**

CH	Freq. (MHz)	power setting	PK Power (dBm)	PK Total Power (dBm)	PK Total Power (W)	Limit (dBm)
		Ant 1	Ant 1			
Low	2402	38	20.22	20.22	0.1052	30
Mid	2439.81	38	20.21	20.21	0.1050	
High	2475.63	40	20.60	20.60	0.1148	

**Average output power :**

**Ant 0**

CH	Freq. (MHz)	AV Power (dBm)	AV Total Power (dBm)
		Ant 0	
Low	2402	16.37	16.37
Mid	2439.81	16.86	16.86
High	2475.63	17.61	17.61

**Ant 1**

CH	Freq. (MHz)	AV Power (dBm)	AV Total Power (dBm)
		Ant 1	
Low	2402	17.60	17.60
Mid	2439.81	17.65	17.65
High	2475.63	18.35	18.35

## 5.4 POWER SPECTRAL DENSITY

### 5.4.1 Test Limit

According to §15.247(e),

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

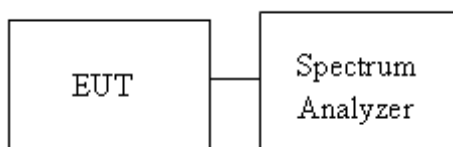
Limit	<input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 8dBm <input type="checkbox"/> Antenna with DG greater than 6 dBi : [ Limit = 8 – (DG – 6) ] <input type="checkbox"/> Point-to-point operation :
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### 5.4.2 Test Procedure

Test method Refer as KDB 558074 D01 v04, Section 10.2

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 3kHz, VBW = 30kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
4. The path loss and Duty Factor were compensated to the results for each measurement by SA.
5. Mark the maximum level.
6. Measure and record the result of power spectral density. in the test report.

### 5.4.3 Test Setup

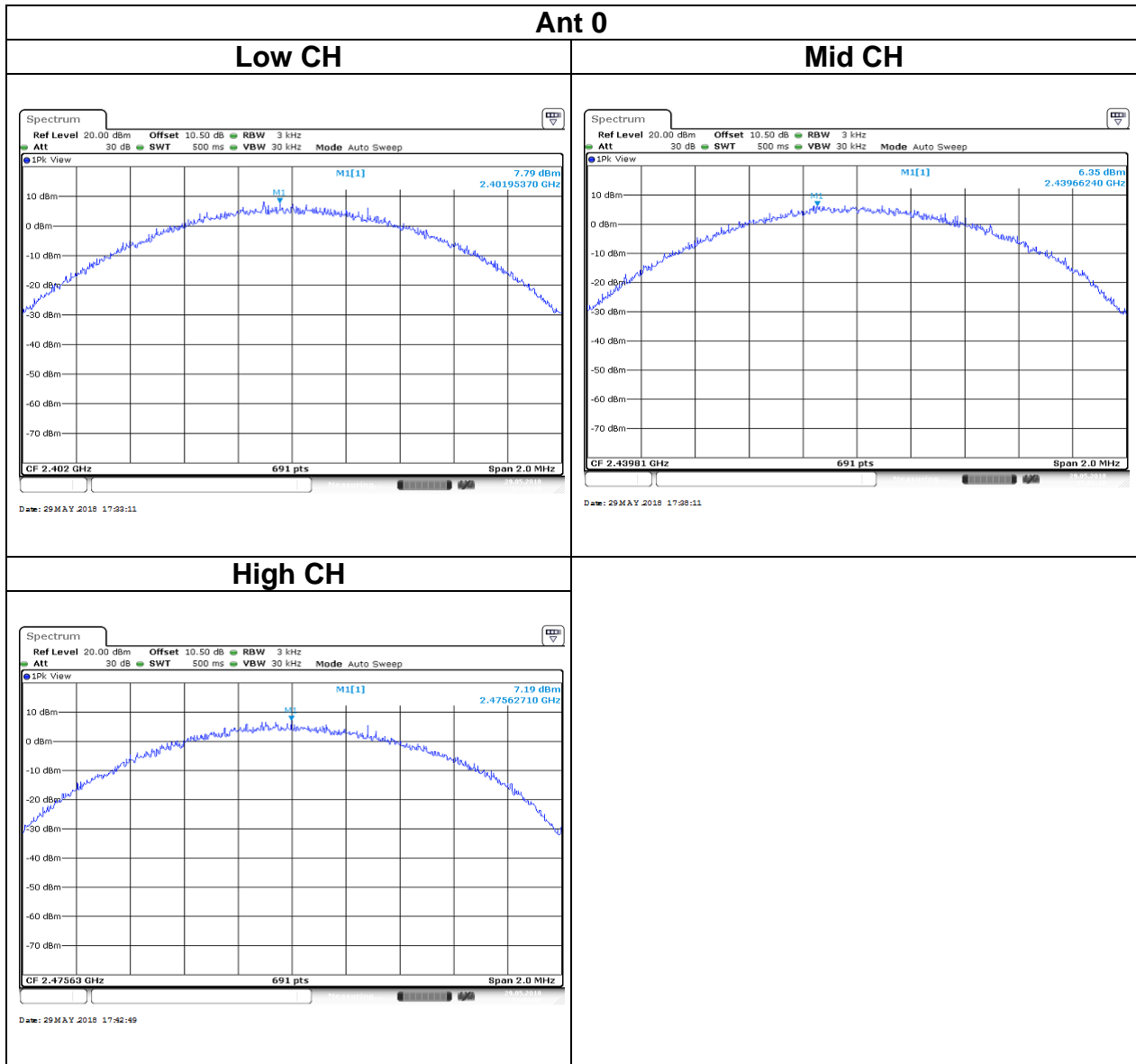


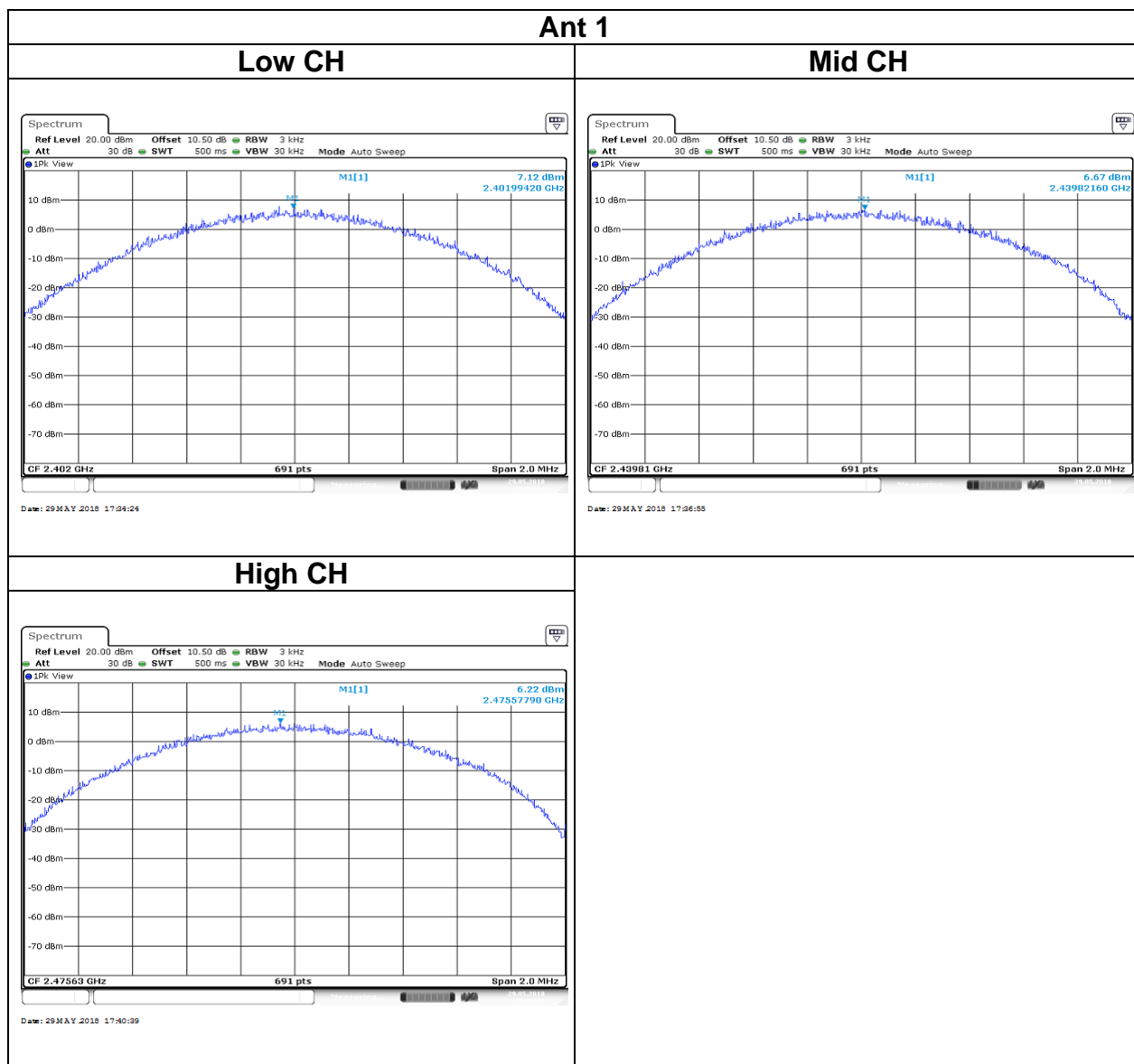


**5.4.4 Test Result**

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Ant 0 PPSD (dBm)</b>	<b>Ant 1 PPSD (dBm)</b>	<b>Limit (dBm)</b>
Low	2402	7.79	7.12	8
Mid	2439.81	6.35	6.67	
High	2475.63	7.19	6.22	

**Test Data**





## 5.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

### 5.5.1 Test Limit

According to §15.247(d),

In any 100 kHz bandwidth outside the authorized frequency band,

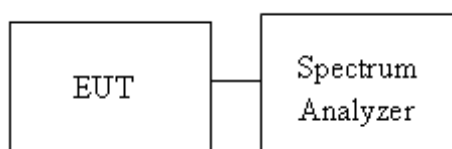
Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

### 5.5.2 Test Procedure

Test method Refer as KDB 558074 D01 v04, Section 11.

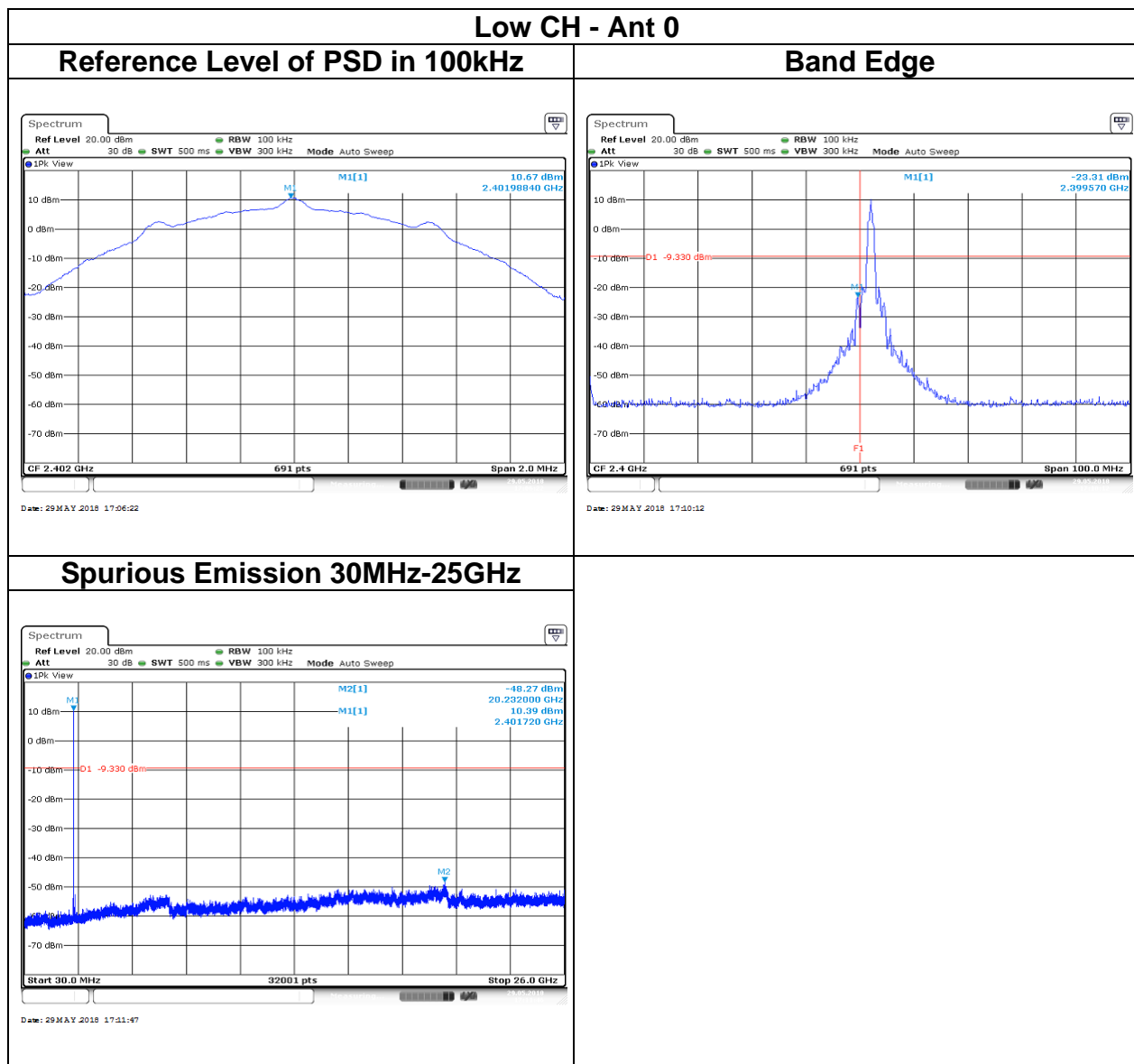
1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.
2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.
3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

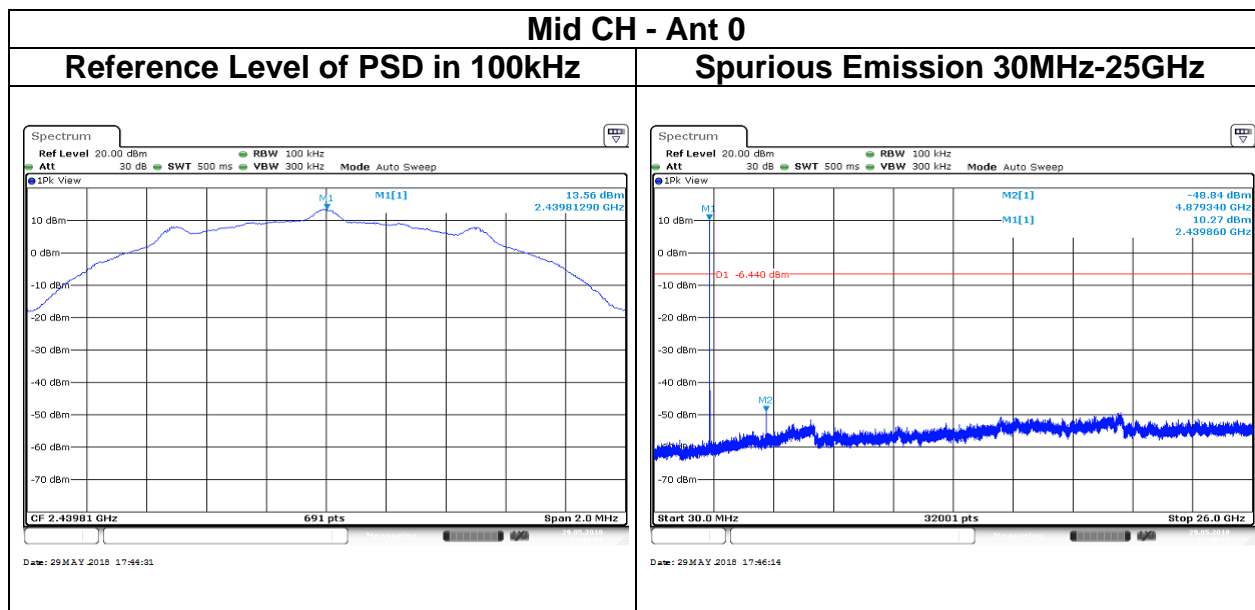
### 5.5.3 Test Setup

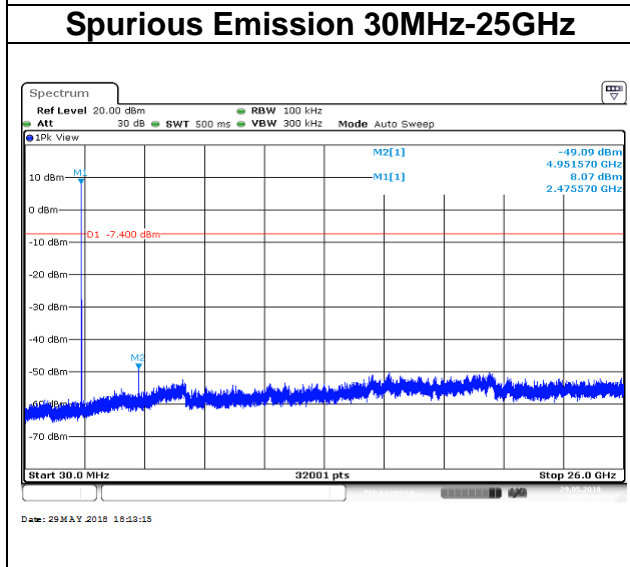
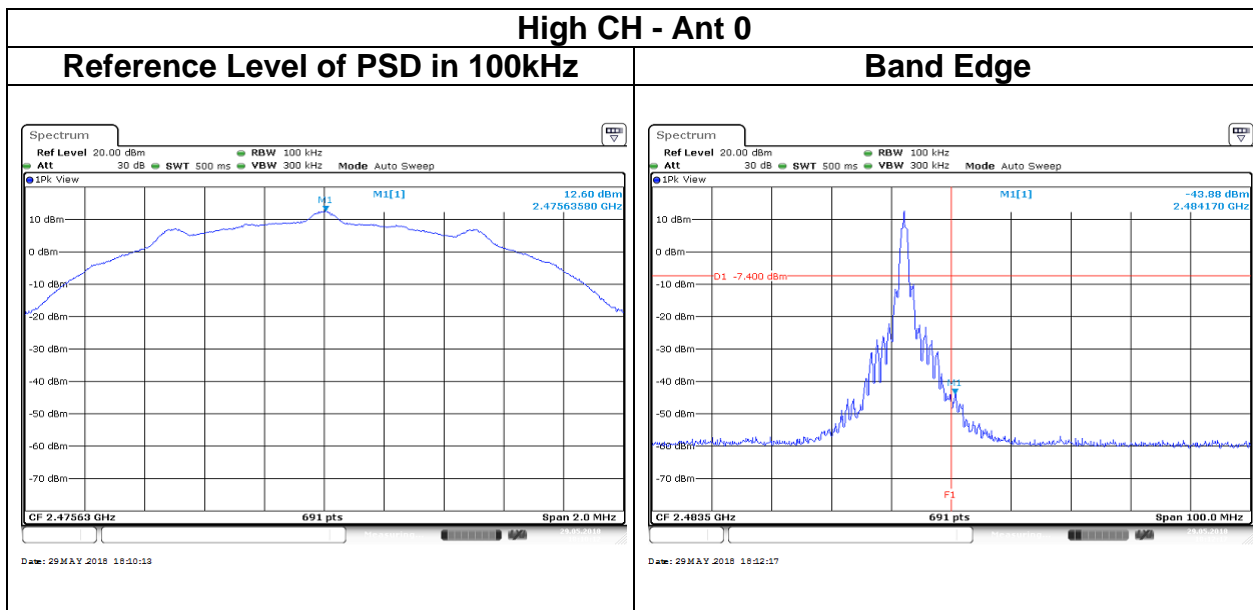


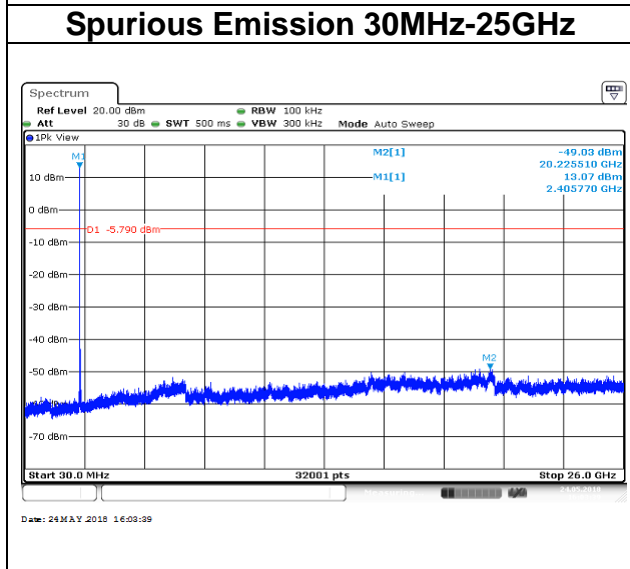
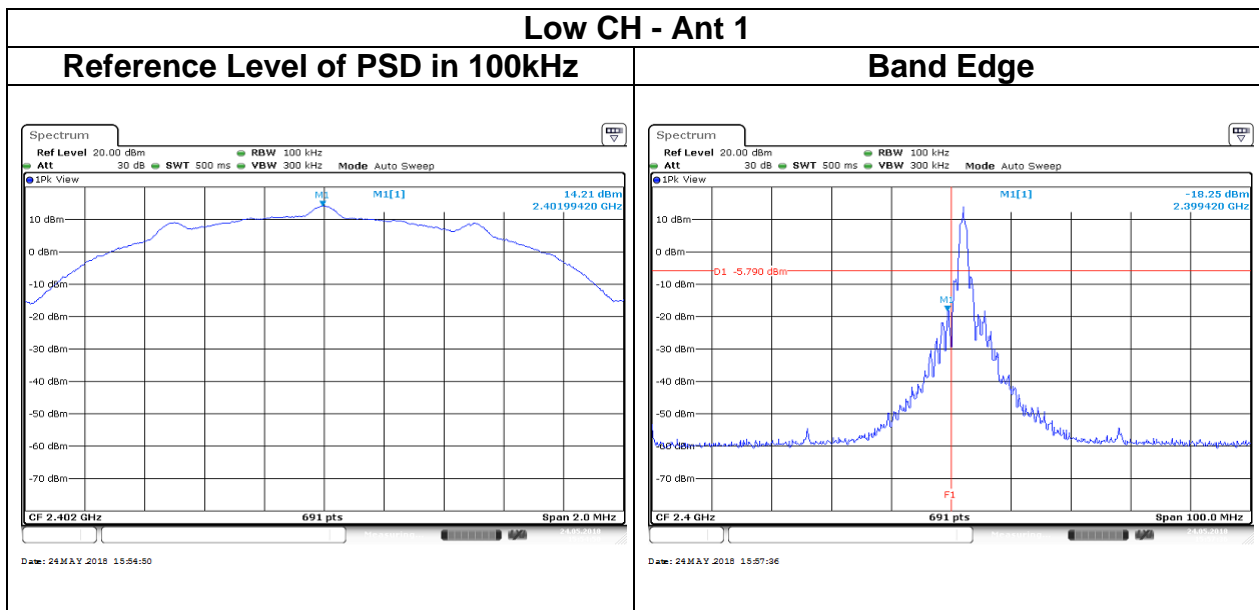
### 5.5.4 Test Result

#### Test Data

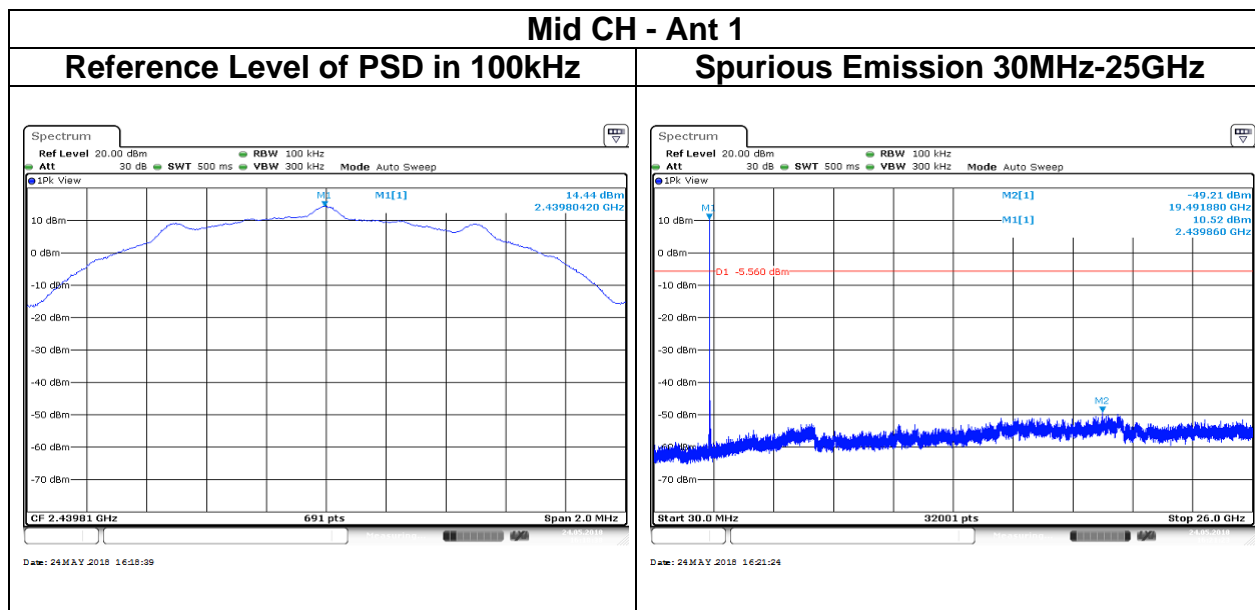


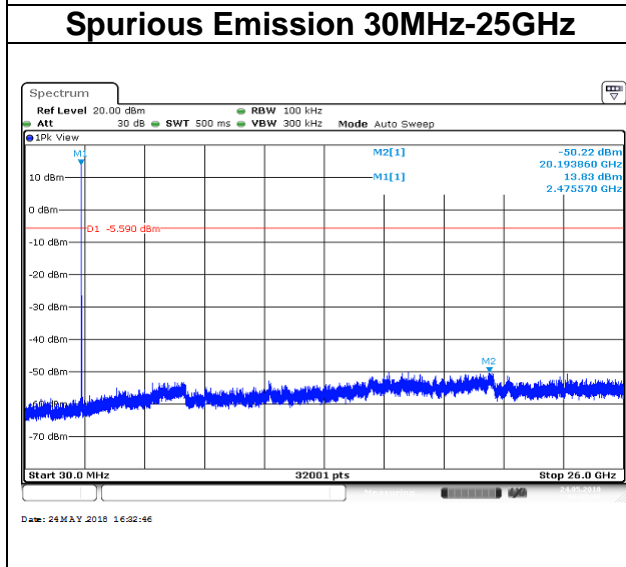
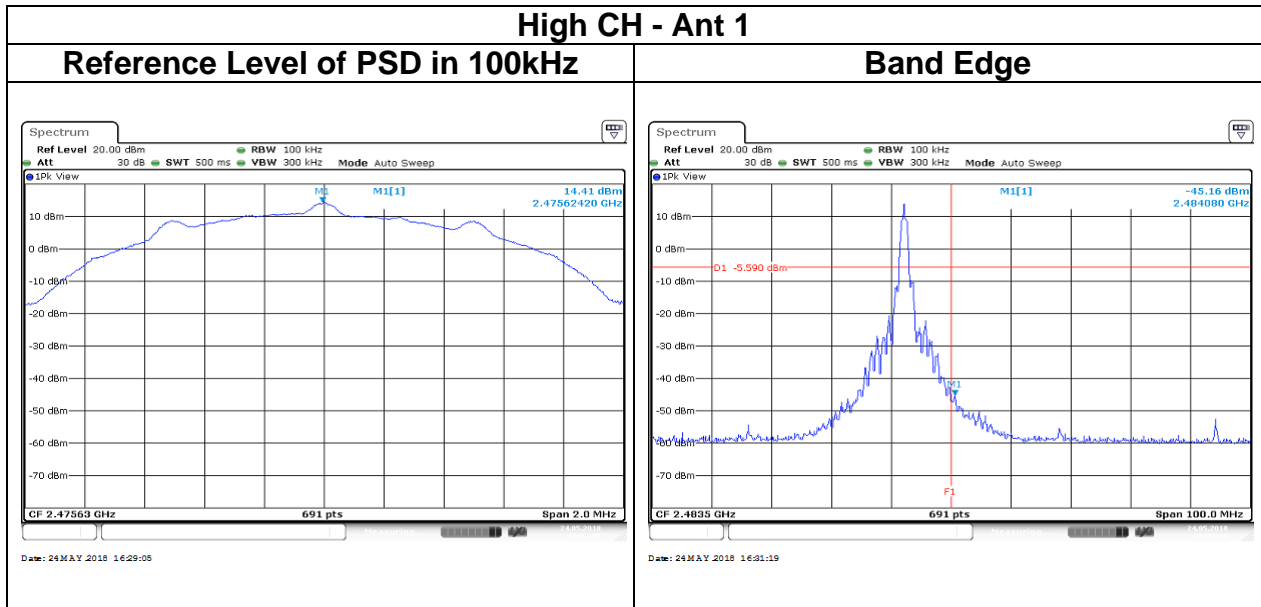












## 5.6 RADIATION BANDEDGE AND SPURIOUS EMISSION

### 5.6.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

#### Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

#### Above 30 MHz

Frequency	Field Strength (microvolts/m)	Measurement Distance (metres)
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

### 5.6.2 Test Procedure

Test method Refer as KDB 558074 D01 v04, Section 12.1.

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10, and the EUT set in a continuous mode.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.
3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.
4. The SA setting following :
  - (1) Below 1G : RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
  - (2) Above 1G :
    - (2.1) For Peak measurement : RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
    - (2.2) For Average measurement : RBW = 1MHz, VBW
      - If Duty Cycle ≥ 98%, VBW=10Hz.
      - If Duty Cycle < 98%, VBW=1/T

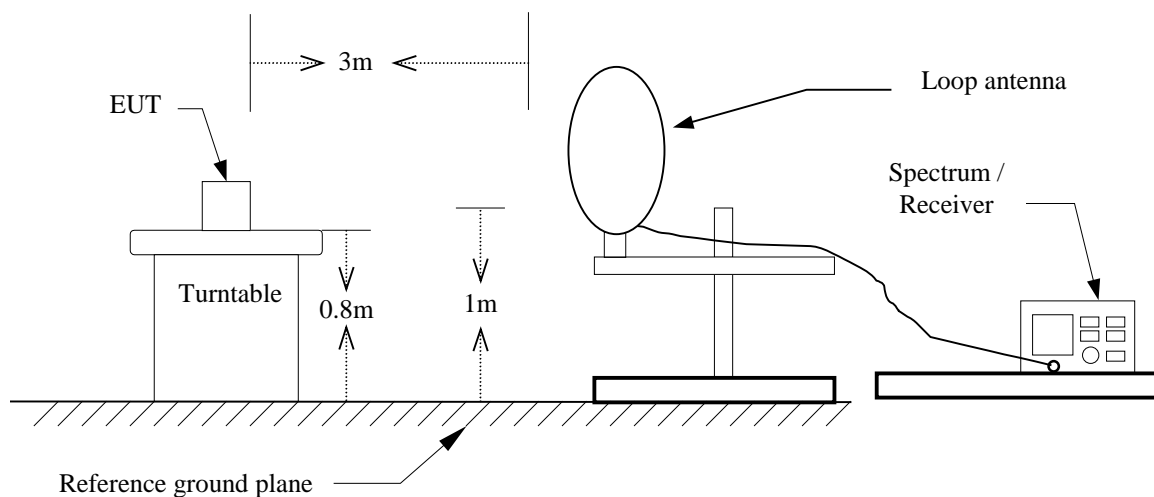
Duty Cycle (%)	T(ms)	1/T (kHz)	VBW Setting
100%	1.0000	-	10Hz

**Remark:**

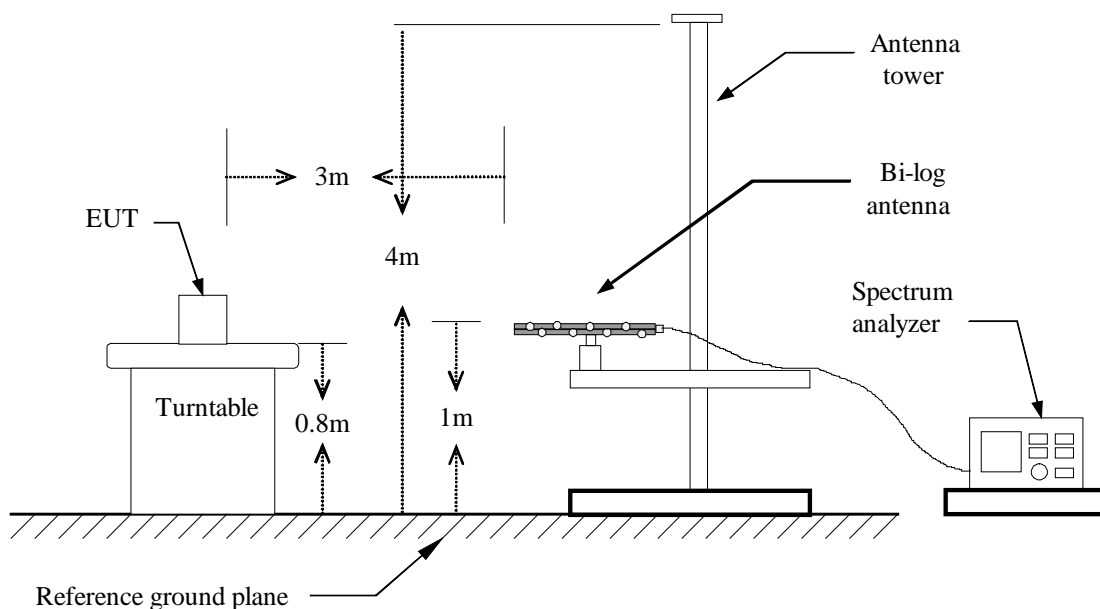
1. *Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 937606.*
2. *No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).*

### 5.6.3 Test Setup

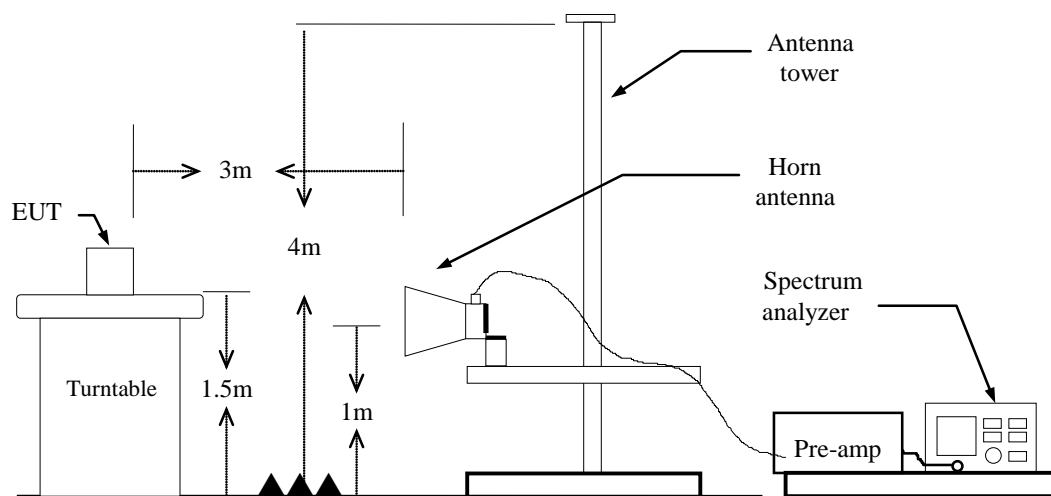
#### 9kHz ~ 30MHz



#### 30MHz ~ 1GHz



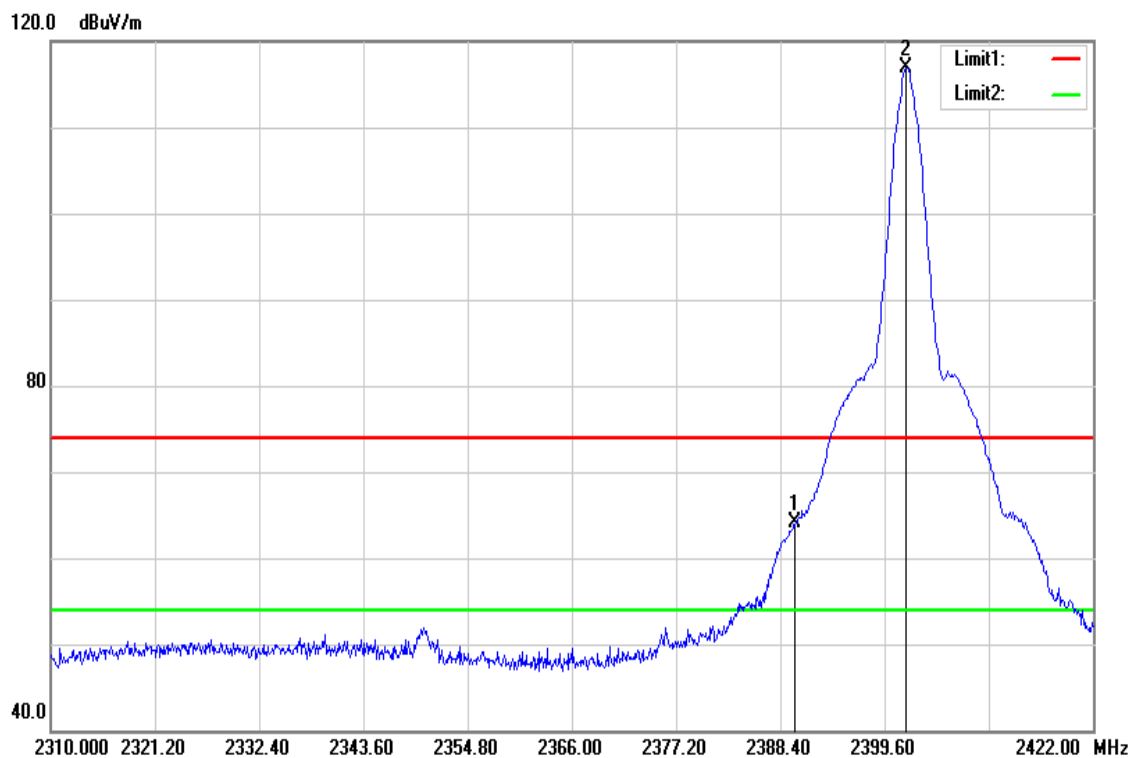
**Above 1 GHz**



### 5.6.4 Test Result

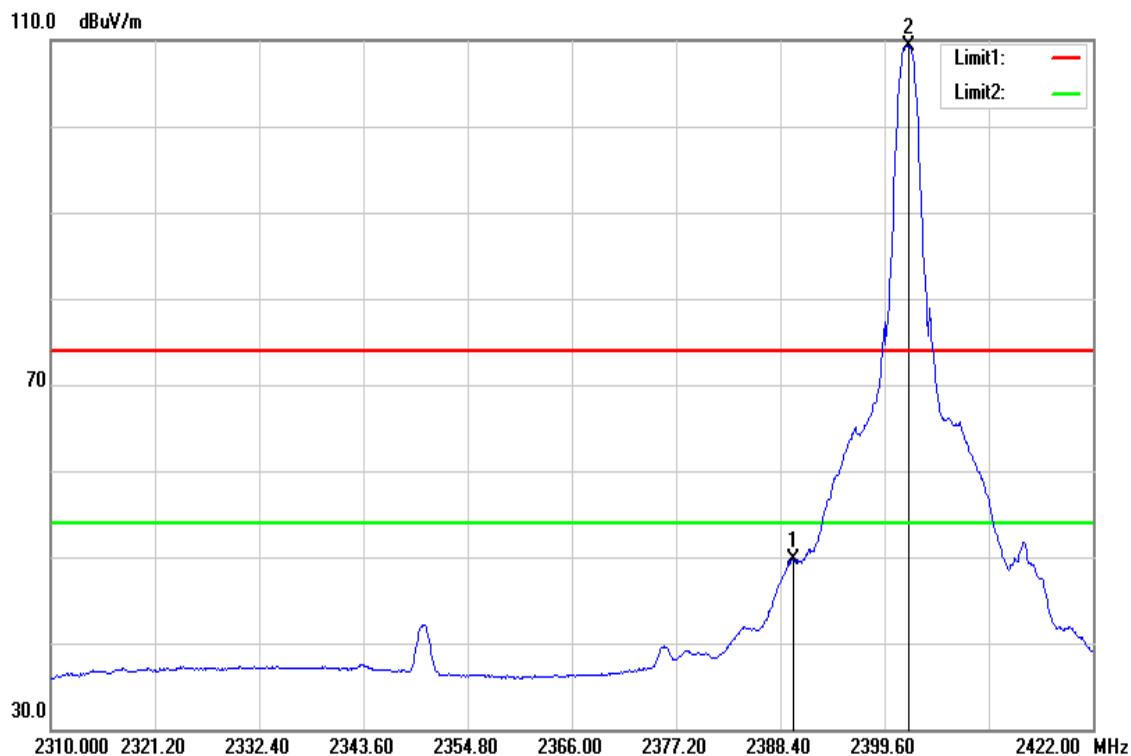
#### Band Edge Test Data

Test Mode	Low CH	Temp/Hum	24(°C)/ 33%RH
Test Item	Band Edge	Test Date	May 24, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac/60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2390.000	67.09	-2.98	64.11	74.00	-9.89	peak
2401.952	119.88	-2.95	116.93	-	-	peak

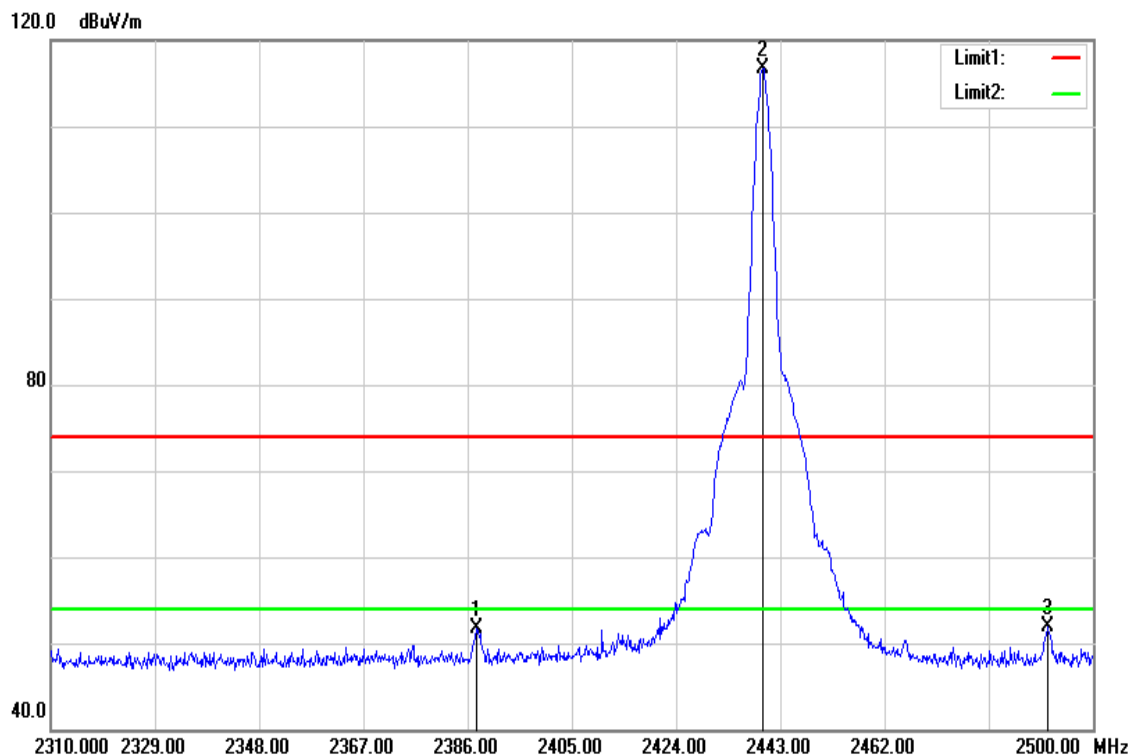
Test Mode	Low CH	Temperature:	24(°C)/ 33%RH
Test Item	Band Edge	Test Date	May 24, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac/60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2389.744	52.75	-2.98	49.77	54.00	-4.23	AVG
2402.176	112.32	-2.95	109.37	-	-	AVG

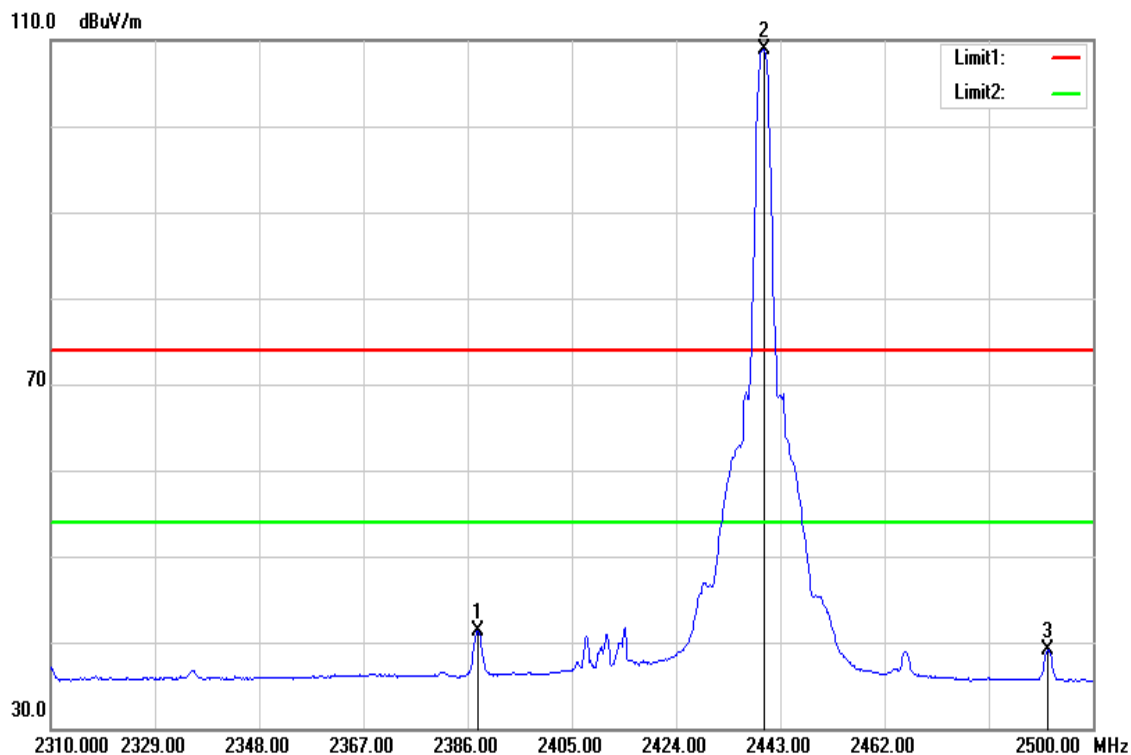


Test Mode	Mid CH	Temp/Hum	24(°C)/ 33%RH
Test Item	Band Edge	Test Date	May 24, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac/60Hz



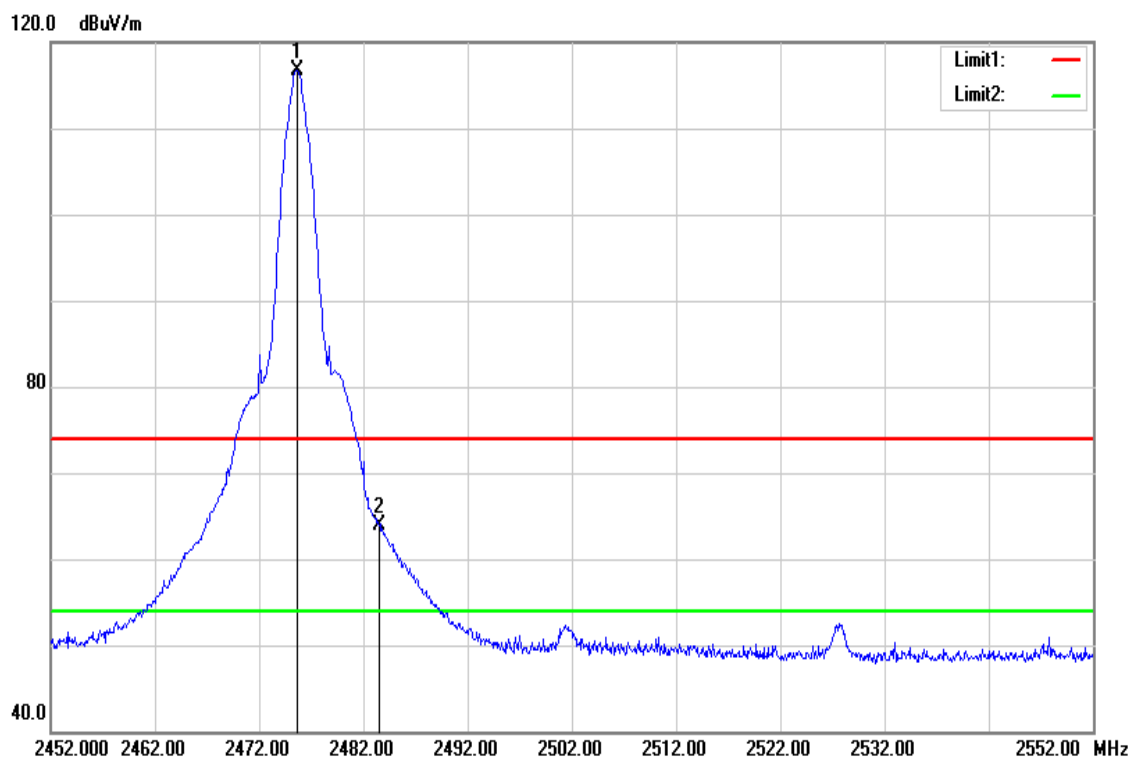
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2387.710	54.73	-2.98	51.75	74.00	-22.25	peak
2439.770	119.54	-2.83	116.71	-	-	peak
2491.640	54.67	-2.67	52.00	74.00	-22.00	peak

Test Mode	Mid CH	Temperature:	24(°C)/ 33%RH
Test Item	Band Edge	Test Date	May 24, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac/60Hz



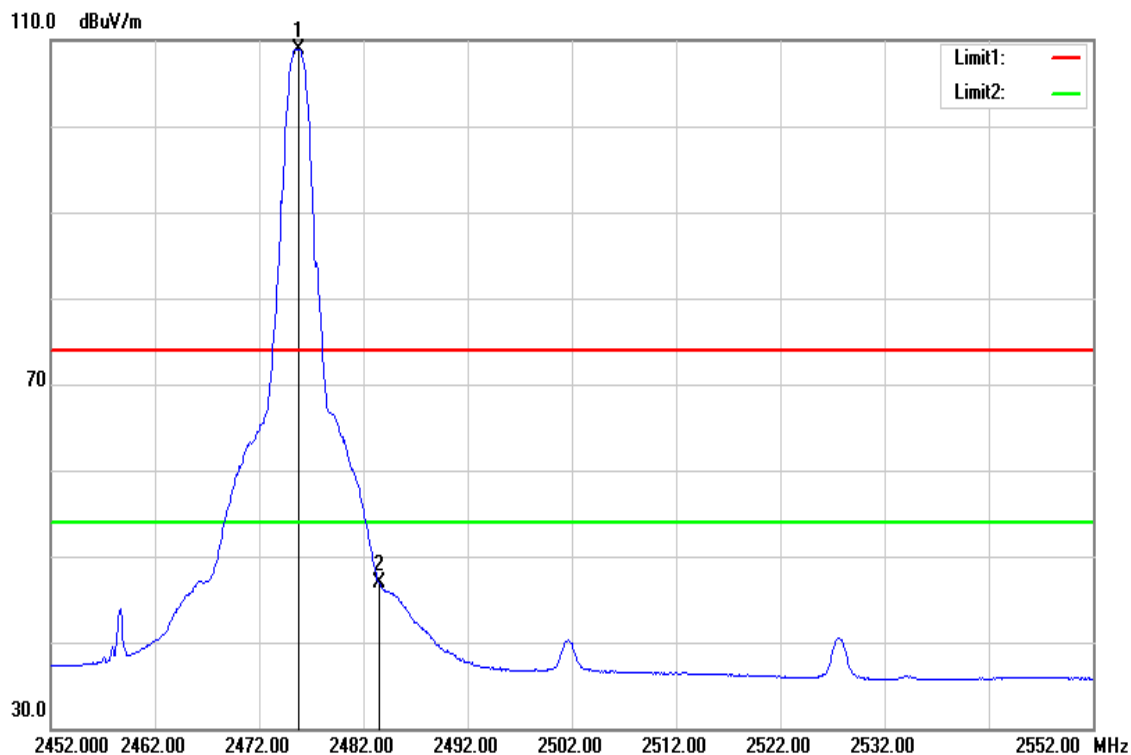
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2387.900	44.27	-2.98	41.29	54.00	-12.71	AVG
2439.960	111.74	-2.82	108.92	-	-	AVG
2491.830	41.76	-2.67	39.09	54.00	-14.91	AVG

Test Mode	High CH	Temp/Hum	24(°C)/ 33%RH
Test Item	Band Edge	Test Date	May 24, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac/60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2475.600	119.38	-2.72	116.66	-	-	peak
2483.500	66.66	-2.69	63.97	74.00	-10.03	peak

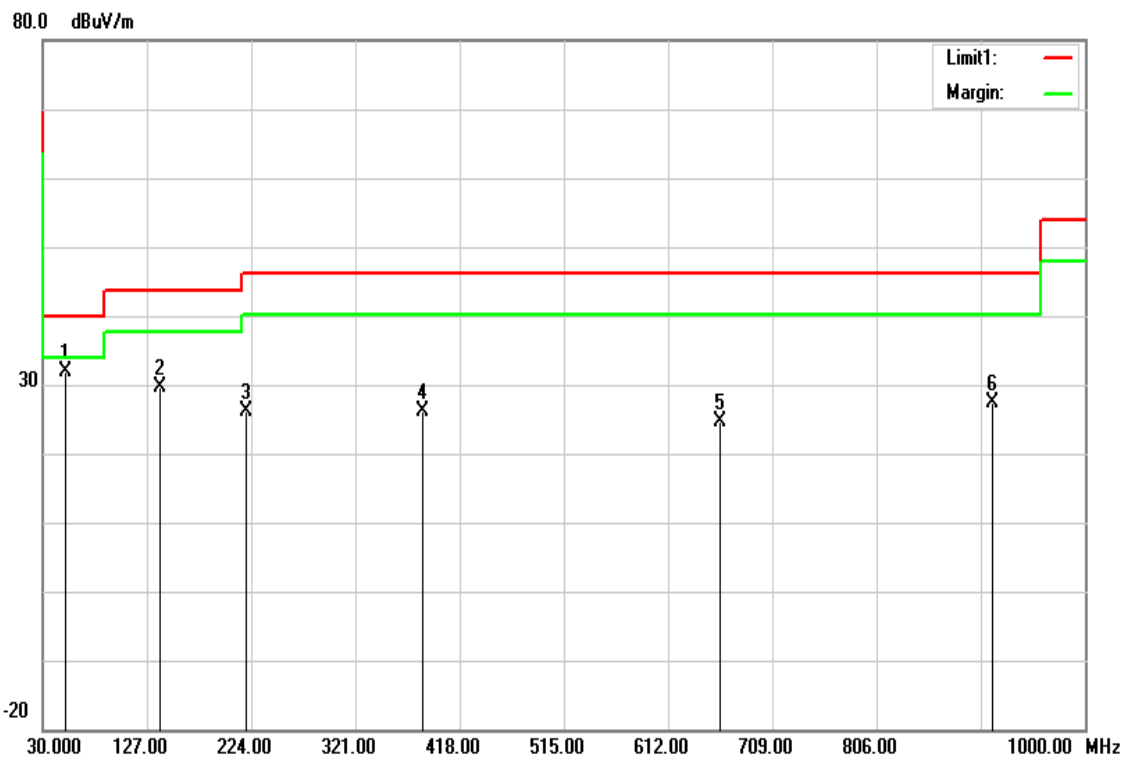
Test Mode	High CH	Temperature:	24(°C)/ 33%RH
Test Item	Band Edge	Test Date	May 24, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	120Vac/60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2475.800	111.67	-2.72	108.95	-	-	AVG
2483.500	49.57	-2.69	46.88	54.00	-7.12	AVG

**Below 1G Test Data**

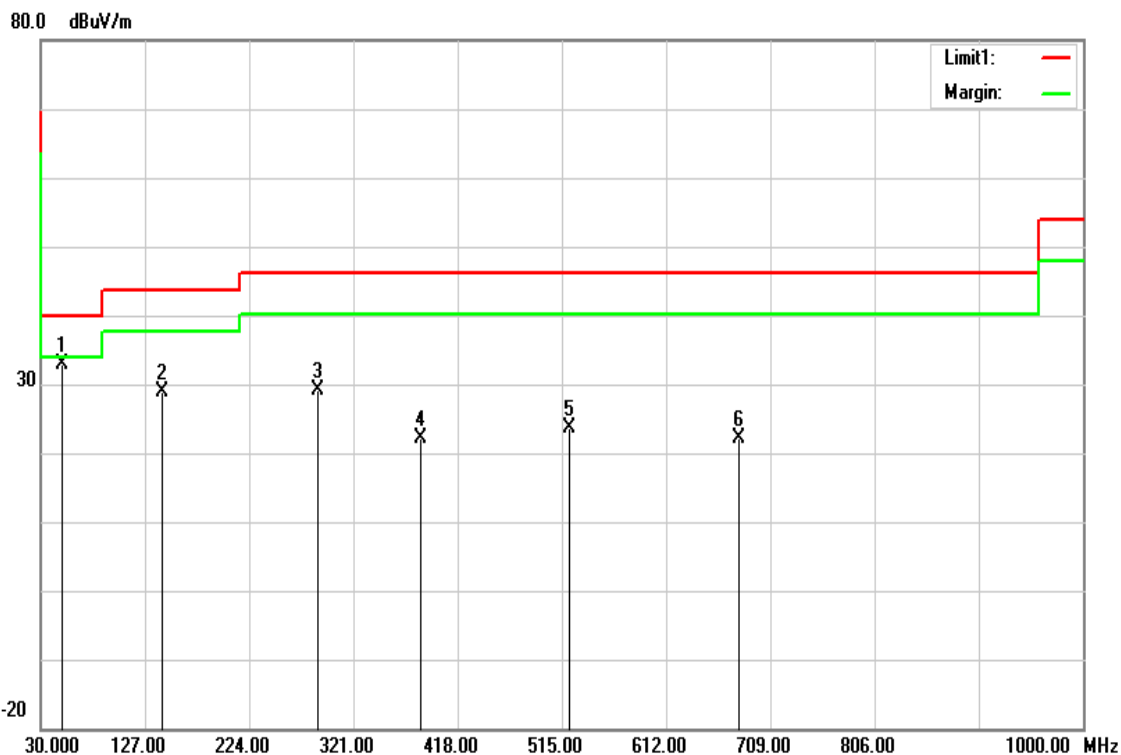
Test Mode	Mode 1	Temp/Hum	24(°C)/ 33%RH
Test Item	30MHz-1GHz	Test Date	May 23, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac/60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
51.3400	53.04	-21.21	31.83	40.00	-8.17	peak
139.6100	45.25	-15.53	29.72	43.52	-13.80	peak
219.1500	43.33	-17.26	26.07	46.02	-19.95	peak
384.0500	38.15	-11.90	26.25	46.02	-19.77	peak
660.5000	30.01	-5.42	24.59	46.02	-21.43	peak
913.6700	29.23	-1.79	27.44	46.02	-18.58	peak

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

Test Mode	Mode 1	Temp/Hum	24(°C)/ 33%RH
Test Item	30MHz-1GHz	Test Date	May 23, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	120Vac/60Hz

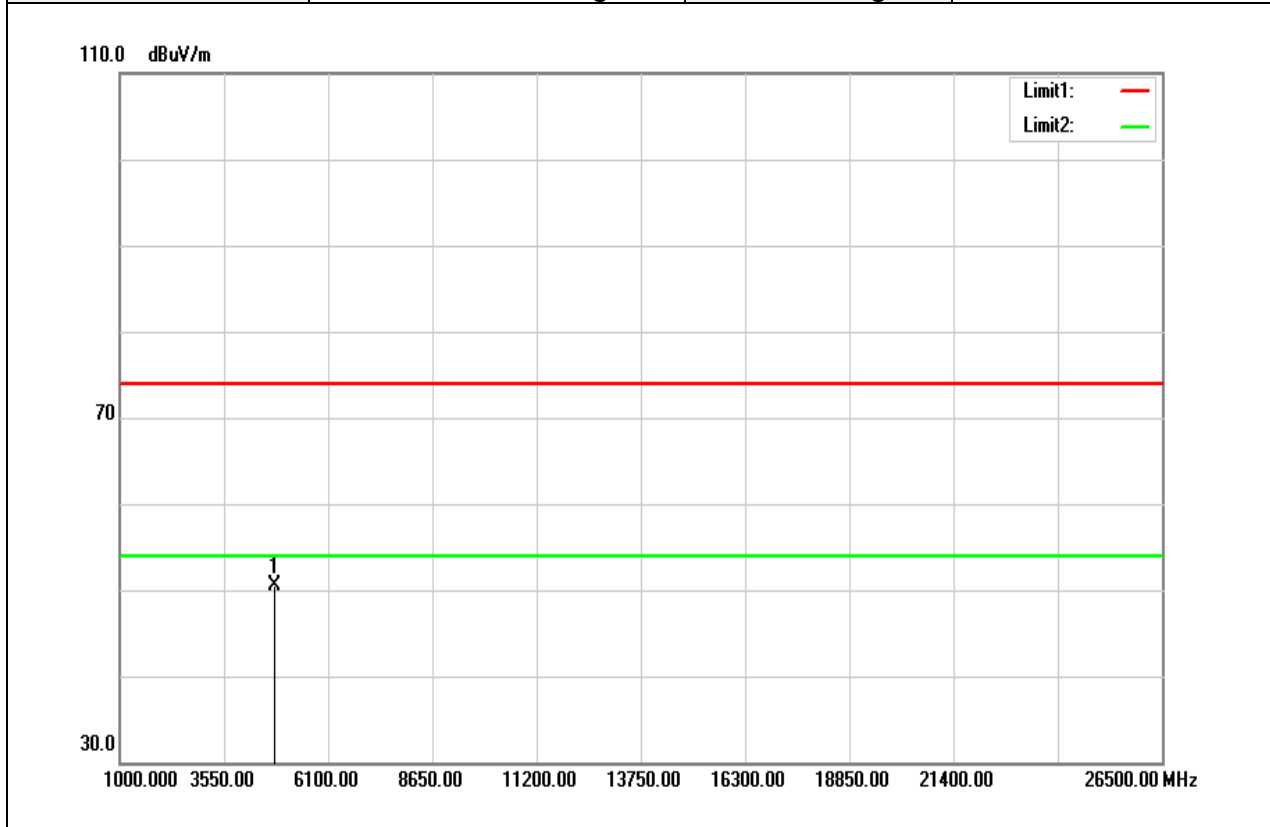


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
50.3700	54.09	-21.13	32.96	40.00	-7.04	peak
143.4900	44.59	-15.61	28.98	43.52	-14.54	peak
288.0200	43.23	-14.19	29.04	46.02	-16.98	peak
384.0500	33.95	-11.90	22.05	46.02	-23.97	peak
521.7900	31.73	-8.08	23.65	46.02	-22.37	peak
679.9000	27.20	-5.15	22.05	46.02	-23.97	peak

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

**Above 1G Test Data**

Test Mode	Low CH	Temp/Hum	24(°C)/ 33%RH
Test Item	Harmonic	Test Date	May 24, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac/60Hz

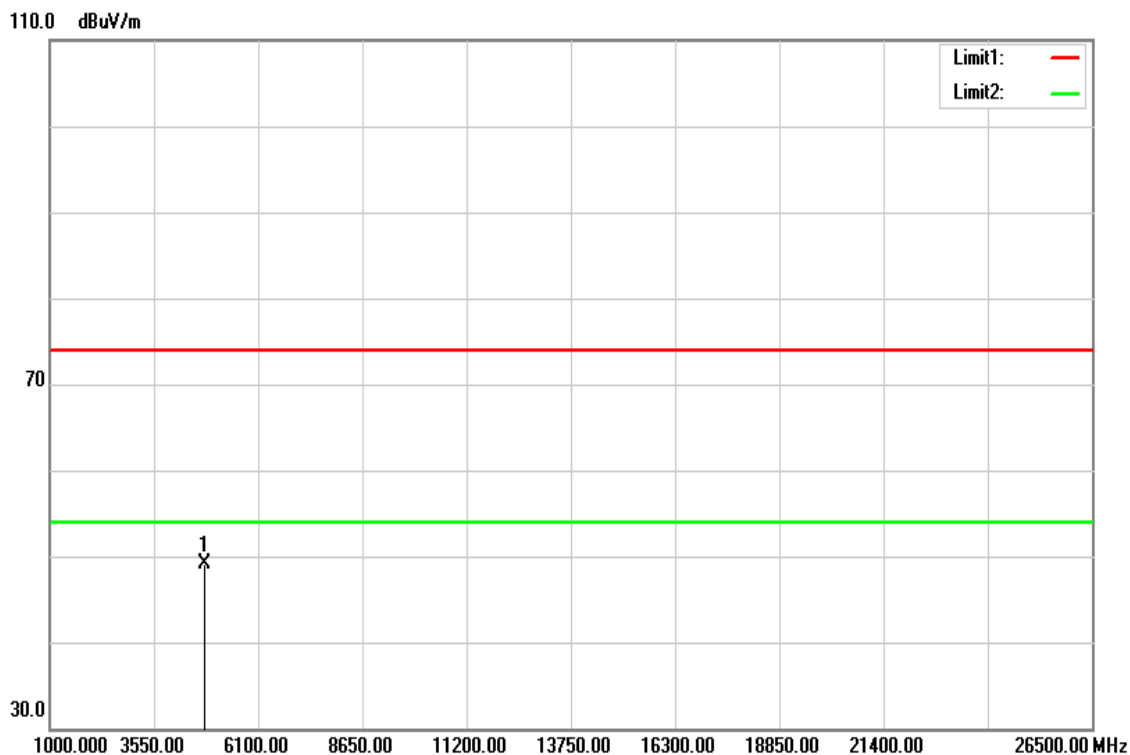


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4806.000	46.11	4.35	50.46	74.00	-23.54	peak
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	Low CH	Temp/Hum	24(°C)/ 33%RH
Test Item	Harmonic	Test Date	May 24, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac/60Hz



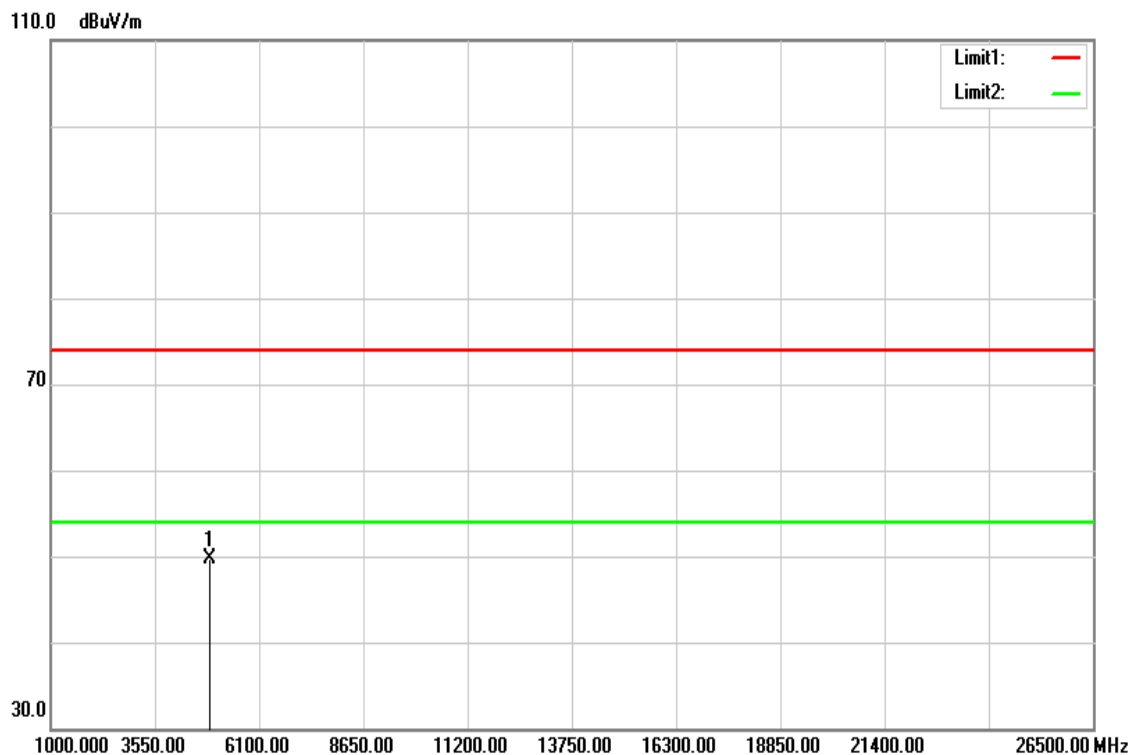
Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4806.000	44.76	4.35	49.11	74.00	-24.89	peak
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit



Test Mode	Mid CH	Temp/Hum	24(°C)/ 33%RH
Test Item	Harmonic	Test Date	May 24, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac/60Hz

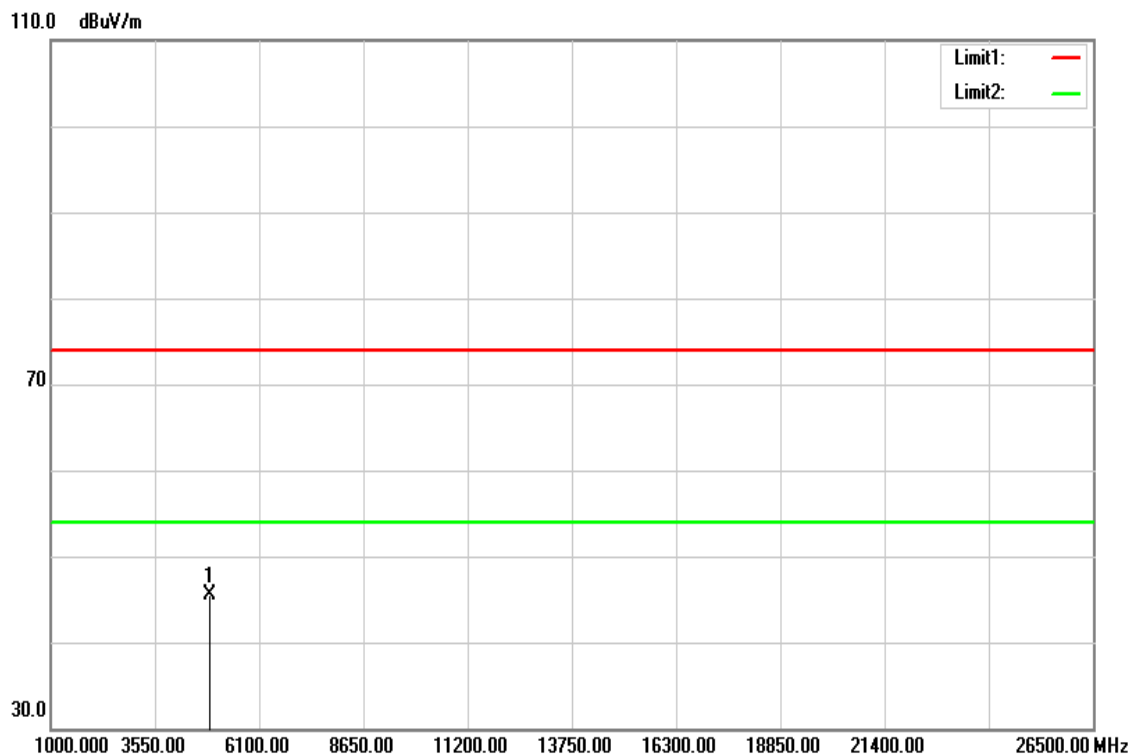


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4883.000	45.29	4.49	49.78	74.00	-24.22	peak
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	Mid CH	Temp/Hum	24(°C)/ 33%RH
Test Item	Harmonic	Test Date	May 24, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac/60Hz

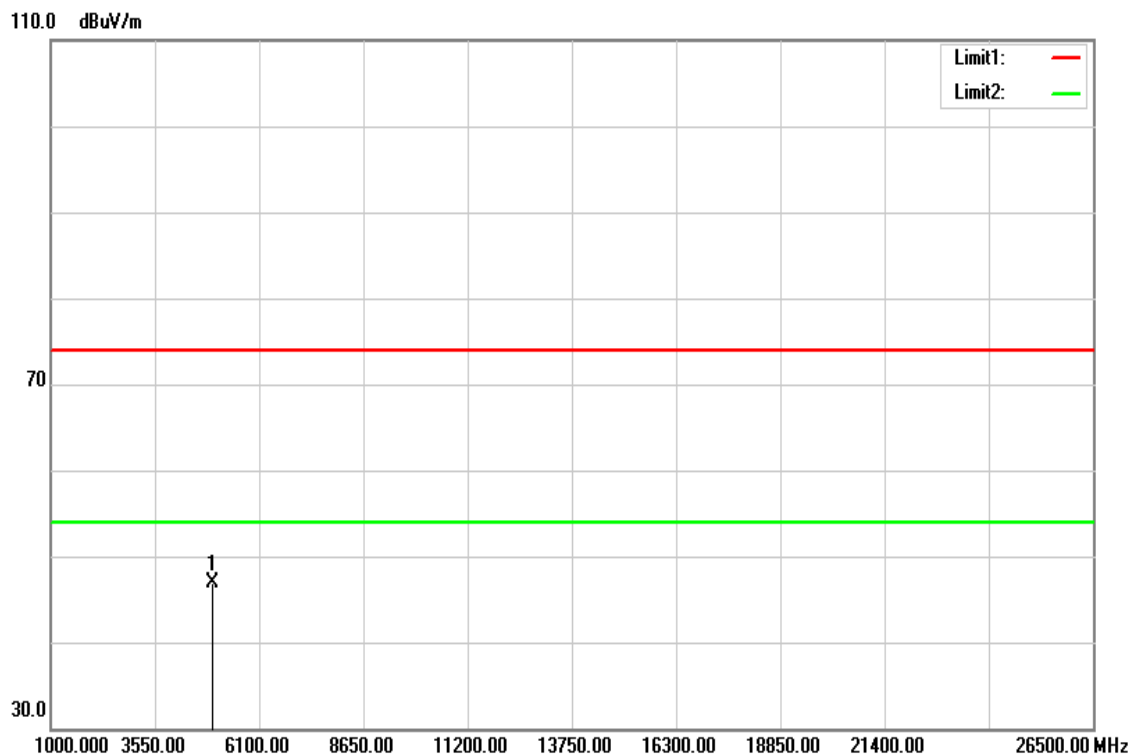


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4883.000	41.01	4.49	45.50	74.00	-28.50	peak
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	High CH	Temp/Hum	24(°C)/ 33%RH
Test Item	Harmonic	Test Date	May 24, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac/60Hz

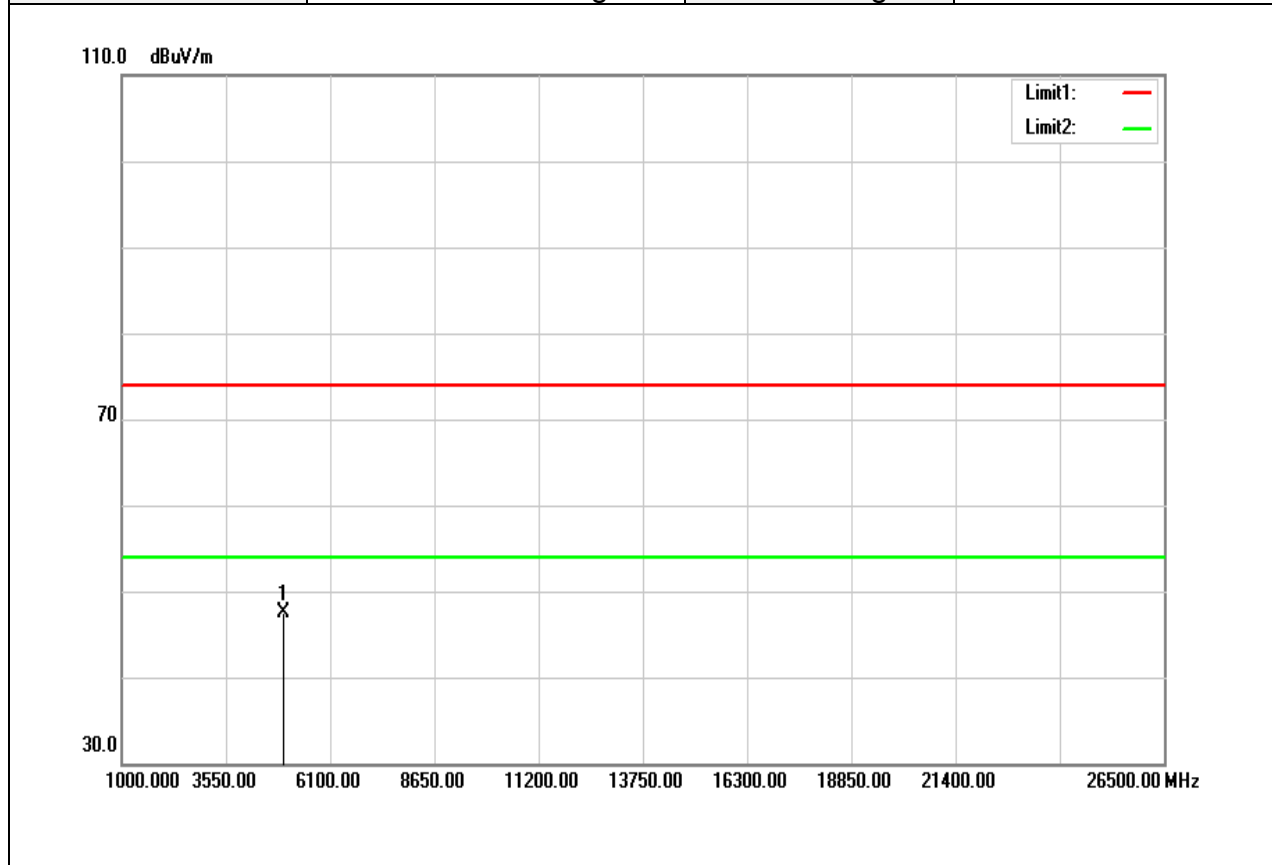


Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4953.000	42.38	4.61	46.99	74.00	-27.01	peak
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	High CH	Temp/Hum	24(°C)/ 33%RH
Test Item	Harmonic	Test Date	May 24, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	120Vac/60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4953.000	42.83	4.61	47.44	74.00	-26.56	peak
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

**--End of Test Report--**